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ABSTRACT

Student mobility is defined as student enrollment at different schools between or within the school year. A study of Texas students' mobility is offered. Although the study focused primarily on within-year student mobility, longitudinal issues were examined by following first-grade students of 1991-92 through the 1995-96 school year. The research found that in the 1994-95 school year there were 3.8 million students enrolled for at least some period during the year in a Texas public school. Sixteen percent of them moved at least once during the year, about one in six during a 12-month period. Assuming that each instance of student mobility coincided with residential mobility, then the overall student-mobility rate in Texas was higher than the national rate (20 percent versus 16.7 percent). Mobility rates also varied with ethnicity and gender, with male students evincing higher mobility than female students and whites demonstrating a lower overall mobility rate (14 percent) than either African-Americans (20 percent) or Hispanics (18 percent). Based on the results, it was recommended that by limiting the frequency of moves and by timing moves to coincide with changes in the school year, parents may be able to mitigate the negative relationship between changing schools and students' academic performance. (RJM)

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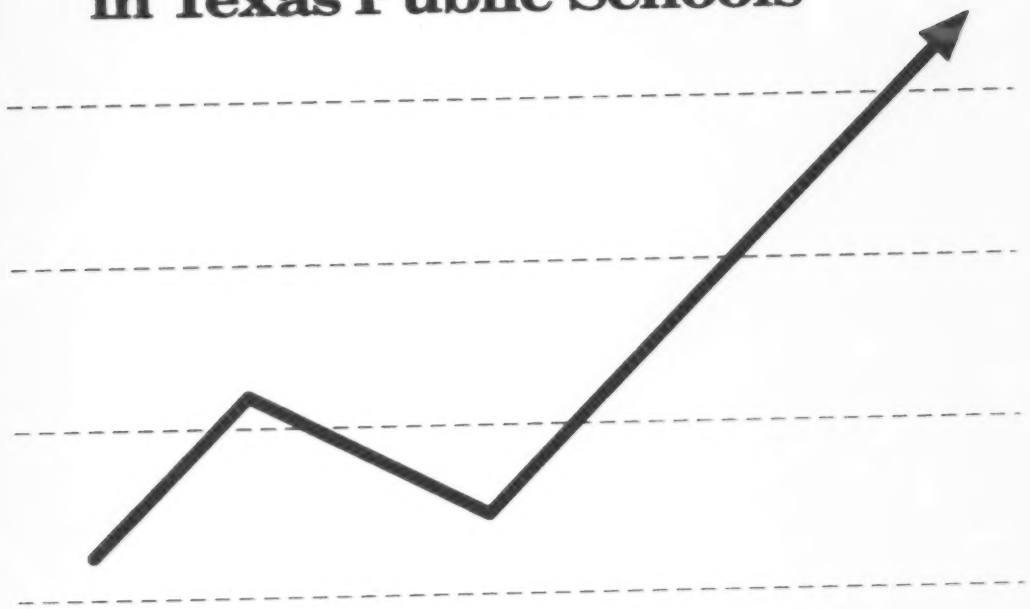
A Study of Student Mobility in Texas Public Schools



Statewide Texas Educational Progress Study

Report No. 3

March 1997

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A Study of Student Mobility in Texas Public Schools

STATEWIDE TEXAS EDUCATIONAL PROGRESS STUDY

REPORT NO. 3 MARCH 1997

A STUDY OF STUDENT MOBILITY IN TEXAS PUBLIC SCHOOLS

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A Study of Student Mobility in Texas Public Schools

Executive Summary

The purposes of this study were to examine the magnitude of student mobility in Texas public schools by reporting how many students are moving, when and where they are moving, and who is moving; and to clarify the relationships between mobility and academic performance at the individual student, campus and district levels. The term mobility in this research is defined as geographic mobility, such that a given student is enrolled at one school at a certain point in time but after a specified interval of time is determined via the Public Education Information Management System (PEIMS) to be enrolled at a different school. The points in time can be variable, but in this investigation both between-year mobility and within-year mobility (the latter in six-week intervals) were selected for study. This approach is distinct from the determination of student mobility employed in the integrated accountability system (TEA, 1996b) and reflects customary research practices in demography, including the techniques used by the U.S. Bureau of the Census.

While the study's primary focus was on within-year student mobility, issues also were examined longitudinally by following the Grade 1 students of 1991-92 through the 1995-96 school year. Analyzing data from the PEIMS database and Texas Assessment of Academic Skills (TAAS) files led to the following major findings.

Characteristics of Mobile Students

1. Mobility rates are higher for economically disadvantaged students than students who are not economically disadvantaged. Almost 60 percent of students who moved during the 1994-95 school year were economically disadvantaged.

2. Mobility rates also are higher for students who are identified as being at risk of dropping out, who are receiving special education services, and who are receiving career and technology education, than their counterparts. These all are student groups that frequently demonstrate relatively lower performance on the TAAS, regardless of their mobility.

3. Students participating in gifted and talented (G/T) programs are more stable (less likely to move at all) than classmates who are not in these programs.

4. Ethnic minority students generally are more mobile than White students. However, when they do move, White students are more likely to move across district lines than to move from school to school within a given district.

5. Analyses revealed that the typical mover *within* a given school year is a student who is economically disadvantaged, not participating in gifted and talented programs, overage for grade level, English proficient, an ethnic minority, and not participating in Chapter 1.

6. Students enrolled in upper elementary grades are less likely to move than those enrolled in early primary grades (EE - 3) or secondary (9 - 12) grade levels.

7. Students who attended prekindergarten in the Texas public school system are 37 percent less likely to withdraw from school (i.e., can no longer be located in the PEIMS database) and 7 percent less likely to change schools in their first 5 years of public schooling than are those who do not have

prekindergarten exposure, after controlling for other sociodemographic characteristics and participation in a variety of programs.

Magnitude and Timing of Student Mobility

8. One out of six students changed schools at least once during the 1994-95 school year in Texas public schools.

9. The overall student mobility rate in Texas, expressed as the number of mobile students out of all students enrolled (per PEIMS), is higher than the national level.

10. Over a 4-year period of time, two-thirds of the first graders in 1991-92 moved at least once. If current Grade 1 students follow the same trend, two out of three will be attending different schools by the time they are fifth graders in the 1999-2000 school year. It is estimated that less than 20 percent of first graders are required to move before Grade 6 due to the grade level configuration of elementary schools.

11. Student mobility occurs throughout the school year, but students and their families do seem to take advantage of the winter break to make their moves, especially those new entrants coming from outside the Texas public school system (students located in PEIMS for the first time).

12. Results from the longitudinal analysis of first graders show that for each additional year a student stays in a Texas public school, the odds of withdrawing from school (in terms of not being located in PEIMS) decrease by 53 percent, and the odds of moving to another Texas public school decrease by 26 percent, when other factors are kept equal.

Relationships between Student Mobility, Campus Characteristics, Program Participation, and Academic Performance

13. Students tend to move between campuses with similar socioeconomic and ethnic compositions. Furthermore, a disproportionate number of outmigrants (students leaving particular schools in the system) and withdrawals from the Texas public school system (students who can no longer be located in PEIMS at any Texas public school) are leaving *Low-performing* schools; however, outmigrants from *Low-performing* schools often move to other *Low-performing* schools in the state. New entrants to Texas public schools are disproportionately enrolling in schools with high percentages of students who are ethnic minorities or are economically disadvantaged. Overall, the highest student turnover rates, expressed as the number of student move-ins and move-outs at a campus divided by the cumulative enrollment of that campus, typically are shown by alternative campuses—a finding to be expected given the nature and purpose of such schools—even though the actual numbers of students involved are relatively small.

14. In general, the academic performance of mobile students is worse than that of stable students:

- Mobile students obtained lower Texas Learning Index (TLI) scores on both Texas Assessment of Academic Skills (TAAS) mathematics and reading tests than did stable students in all grade levels tested. On average, mobile students lagged behind by about 5-7 TLI points.

- The percentage of mobile students meeting minimum expectations or passing the TAAS mathematics or reading tests is much lower than it is for their stable counterparts at all grade levels. The gaps between groups, in terms of the percentage passing the mathematics or reading tests, range from 11 to 21 points. The gaps tend to increase with the students' grade level: the higher the grade level, the larger the gap.

- In aggregate, over a one-year period, mobile students' reading and mathematics TLI scores show smaller gains or greater losses than the changes in performance shown by students who do not move.

15. Among students moving between districts (interdistrict), changing schools within a district (intradistrict), or newly entering the system, the intradistrict movers performed the worst. On average, interdistrict movers performed about 3 to 6 TLI points better, and new entrants performed about 2 to 6 TLI points better, than intradistrict movers. This finding is consistent with the profile of intercampus movers described earlier.

16. The less frequent the mobility, the better the academic performance. On average, students who did not move during the 1994-95 school year performed between 5-7 TLI points higher on both TAAS mathematics and reading tests than did those who moved once, who in turn scored higher than students who moved twice, and so on.

17. The earlier the move, the higher the achievement. Those who moved during the last two 6-week periods of the school year scored significantly lower on TAAS mathematics and reading tests than those who had moved earlier. Those who moved during the winter break performed slightly better than those who moved during the middle of the fall semester, although this pattern was statistically significant only for the Grade 7 TAAS reading test. Results from longitudinal analyses of the 1991-92 first graders' scores, by the time they were in the fifth grade in 1995-96, also confirmed that the less frequent the mobility and the earlier the move, the better a student's academic performance is expected to be.

18. As anticipated, out of the variables being studied, students' previous achievement has the strongest impact upon their current performance. However, even after statistically controlling for their previous test scores and their socioeconomic status, mobile students still performed 1 to 2 TLI points lower than stable students on TAAS mathematics and reading tests.

19. The performance gap between mobile and stable students, as measured by TLI scores on the TAAS, is greater on campuses with higher percentages of economically disadvantaged students or higher student turnover rates.

20. The student turnover rate at the campus level has strong negative relationships with other campus/district performance indicators, such as the percentage of students passing all TAAS tests taken, the percentage of graduates taking SAT/ACT, and the percentage of students meeting or exceeding SAT/ACT criterion scores for the accountability system. The strong negative association between accountability ratings and student turnover rates at the campus level is best shown by examining the variability in student turnover rates among schools with different accountability ratings. In 1994-95, for example, average student turnover rates ranged from 15 percent among *Exemplary* schools to 30 percent among *Low-performing* schools. In other words, on average, student turnover rates among *Low-performing* schools were twice as high as those among *Exemplary* schools.

21. Test results for 121,268 student taking the 1995 TAAS were excluded from the results used for accountability purposes because the students were not enrolled in the district as of October 28, 1994. Based on findings presented here, it can be estimated that about 42 percent of those students moved into the district after the start of the spring semester and 19 percent of those students moved into the district after the beginning of the fifth 6-week period or later.

Recommendations

Based upon these findings, the following recommendations are offered.

- By limiting the frequency of moves, and by timing moves to coincide with changes in the school year to the greatest extent possible, parents may be able to mitigate the negative relationship between changing schools and their child's academic performance.

- Schools and districts should examine the resources and programs available to help mobile students make a smooth transition into a new school. These students are disproportionately from groups that

demonstrate lower performance on TAAS, relative to their peers. The additional drop in academic performance associated with mobility may have long-term implications for both individual student academic progress and overall campus and district performance.

- Findings from this study of student mobility support continuing to exclude performance of students who move into the district late in the school year from campus and district accountability ratings. The later in the school year students move, the less well they perform on TAAS and the less time districts have to help them adjust to the disruption in their academic progress. Results from a separate analysis of three years of student attendance data from 1993-94 to 1995-96 in Texas public schools showed that student enrollment normally peaks in the first two 6-week periods. However, student enrollment between the first day of school and the end of the first 6-week period is known to fluctuate widely (Kelley, 1996). Therefore, using enrollment figures from the second 6-week period seems more adequate than those from the first 6-week period, in terms of inclusiveness of students in the accountability system and relative stability of the numbers at the district level. For most districts and schools on a traditional calendar, the October "as of" date used to determine the subset of students included in the accountability system falls in the second 6-week period.

- This study also supports the current policy of determining the subset of students to be included in the accountability system *at the district level*, rather than at the campus level. In the 1994-95 school year, the majority of all school districts (598 out of 1,045) experienced no intradistrict movement by students; most of these districts contained only one campus of each type (elementary, middle, high school). Therefore, the inclusion of intradistrict movers in the October subset was irrelevant to most school districts, but among the remainder for whom the difference potentially was salient, the policy encourages taking steps to address issues such as uniformity of curriculum and support for student transition to new schools. Additionally, determining exclusion of students from the accountability system at the district level frees districts to determine appropriate placement of students into alternative settings without excessively excluding children from the accountability system. An analysis of the intradistrict moves made by students in this study shows that only 13% of all 150,015 intradistrict moves likely were determined by educators, i.e., were associated with alternative campuses. Instead, the vast majority of intradistrict moves occurred from regular campuses to regular campuses and were presumed as such to reflect family movement decisions. Therefore, the data indicate that educators likely are exercising appropriate discretion in placing students into alternative settings.

- Continue to include a measure of mobility in the construction of campus comparison groups for the computation of comparable improvement in the accountability rating system for Texas public schools. Because it captures virtually all forms of movement, explore the use of the campus turnover rates in place of the current mobility measure, which is based upon the percentage of the school year that each student was enrolled.

- Future research needs to examine a host of issues and questions raised by this report.

    1) Address the possible differential relationships between normative versus non-normative moves and student achievement. Normative moves are those that result from regular student progress that all students are expected to make, for example, moving from a primary grade school to a middle school between the fifth and sixth grades. The timing of normative moves and short- and long-term relationships to student achievement also need to be examined.

    2) Examine programs and practices in schools where mobile students are performing better than expected.

    3) Examine the impact of a uniform curriculum in moderating the negative relationships between student mobility and individual-level and aggregate academic achievement.

    4) Analyze further the relationship between mobility and grade-level retention.

A Study of Student Mobility in Texas Public Schools

Introduction

Historically, the United States has been a society on the move. Nearly 43 million Americans moved in the one-year period between March 1993 and March 1994. This amounted to 16.7 percent of the population one year of age and older. School-aged children have a similar overall mobility rate (U.S. Bureau of the Census, 1995). That is, about one out of six school-aged children changes residence during a one-year time period. Compared to children in several western countries and Japan, American children have one of the highest mobility rates (Long, 1992).

As both the nation and state address issues such as freedom of school choice, home-rule districts, curriculum reform, and accountability systems for schools and districts, the impact of student mobility must be taken into account. Student mobility and its relationships to learning and instruction are rarely discussed in research, per se, but there are popular beliefs among teachers and other professional educators which maintain that (a) mobility that encompasses a change of schools has a negative effect on learning and instruction, and (b) highly mobile student populations adversely influence overall campus and district performance.

The purpose of this study is to clarify the relationships between mobility and student, campus and district performance. The study will first determine the magnitude of student mobility by reporting detailed statistics on different types of mobility rates by campus, district, and other selected group characteristics. After reporting the overall magnitude of student mobility—i.e., how many school children are moving, and when and where they are moving—the sociodemographic characteristics of those movers will be delineated. That is, the study will describe which students are moving and what their group characteristics are. Finally, the possible relationships between student mobility and academic achievement will be examined.

Descriptive analyses of student mobility are essential for educators at different levels of the system to help direct instructional programs, by reporting back to them how many school children are moving, when and where they are moving, and who is most prone to move. The current Texas student assessment program measures student performance relative to the state's curriculum framework; aggregate performance then is used to ensure school accountability for student learning (TEC §39.022). Thus, understanding the issues surrounding student mobility and student achievement can be important for both campus- and district-level planning and decision making vis-à-vis the dual goals of educational excellence and equity. The study also seeks to generate one or more mobility indices to be considered for use in identifying campus comparison groups for the comparable improvement measure in the state accountability system.

Literature Review

The effects of student mobility have received attention in educational research and policy circles and have been a source of concern among the general public, but actual empirical studies on student mobility are scarce. Most researchers who have investigated student mobility have observed negative effects upon learning and instruction. Most also agree that student mobility

involving a change from one school to another is a substantial phenomenon worthy of investigation and that there are numerous causes behind each move.

Children move for different reasons and the reasons for the moves are complex. Some of them sound all too familiar, such as parental job termination; promotion or relocation transfers; marital disruption and separation; or parental death. Often it is simply due to "inability to pay the rent" (Lacey, 1978). Some poor families move constantly in order to take advantage of "move-in specials" at apartment complexes in the area. The students may be at a given school for only three or four months, until they move to the next apartment with a reduced rent (M. Scheevel, personal communication, October 25, 1994). In one case, the increased awareness of student mobility enabled schools, county governments, and landlords in Rochester, New York, to establish a cooperative effort that emphasized to parents the importance of keeping their children in the same school. Parents were helped to find housing within the same school area if a move was necessary (Kelley, 1996). Since the primary research focus in this report is on student mobility's relationship to schoolwide performance, a more extensive discussion of the questions concerning *why* students are moving is beyond the scope of this report. This issue was mentioned here in acknowledgment of awareness of that body of literature.

Returning to the core issue of aggregate performance in relation to mobility, a recent study by the U.S. General Accounting Office (1994) examined a nationally representative sample of 15,000 third-graders in 235 elementary schools to gauge student mobility. The study concluded that children who are from economically disadvantaged families or who attend inner city schools are more likely than others to have changed schools frequently. As a result, those mobile third-graders are more likely to be low achievers and to repeat a grade.

Historically, there is a popular belief that urban schools are subject to more highly mobile student populations than are rural schools. Therefore, many studies have been conducted in urban settings. Ingersoll, Scamman and Eckerling (1989) reported that negative effects of geographic mobility upon student academic achievement were most prominent at the early grade levels. However, negative effects also were found at all the other grade levels as well. In most grade levels, the effect was stronger in mathematics than in reading achievement. Ingersoll et al. also found that the student mobility rate *diminished* with higher grade levels. Data for their study were drawn from the student data base of the Denver (CO) Public Schools.

Brent and DiObilda (1993) conducted an experimental study on 189 second graders from two urban elementary schools in New Jersey. They designated one school as the control and the other as the experimental school. The control school maintained traditional basal programs that had been used in the school for at least ten years, while the experimental school introduced new instructional materials to the classroom "according to a clearly defined set of principles, for example, analysis of the objectives in order to form teachable component concepts and sets of concepts, identification of preskills, and selection and sequencing of examples" (p. 333). Each school had two student groups—stable and mobile. In their study, stable students were defined as "those students who had been continuously enrolled in their programs for at least 2 years," and mobile students were "those who moved from school to school annually" (p. 334). Their results indicated that both programs were successful in promoting student achievement in general. However, in both schools mobile students scored significantly lower than stable students, especially in reading. Their findings suggest that student mobility is a dominant factor for lower academic performance among urban children, who often are also from low income households.

Another study done in New Jersey by Research for Better Schools (1987) analyzed student mobility in the Perth Amboy School District, an urban district in New Jersey. Specifically, it examined the relationship between student mobility and test scores on the High School Proficiency Test (HSPT), a set of proficiency tests that are used statewide as criteria for graduation and as one of the criteria needed for state certification of school districts. As expected, the study found that a student's number of consecutive years enrolled in the same district, average attendance, classroom behavior, and language spoken at home were all related to HSPT performance.

In Texas, Paredes (1993) examined factors associated with student mobility in the Austin Independent School District (AISD), also an urban school district. The study indicated that low-income, African American, and Hispanic students were more likely to be mobile than middle-income or White peers. A negative relationship between student mobility and student achievement also was found in the study.

Negative consequences of student mobility on school performance have been demonstrated not only in urban schools but also in rural areas. Fitchen (1994) observed from her field research that in rural upstate New York, and probably in many other parts of the country, the rural poor actually were (a) more mobile than commonly realized, (b) more mobile than the general population, and (c) more mobile than in the past. She noted that most of the residential mobility in rural areas occurred within the same county but "even a short-distance move may take a child into another school district with fundamentally different teaching approaches, methodology, and basal texts" (p. 427). An obvious consequence was that "children who enter the district late in the year may be unable to perform well enough in classroom work to be promoted to the next grade" (p. 427).

Children who have moved frequently are not only more likely to be low achievers but also are more likely to have behavioral problems than non-movers (Wood, Halfon, Scarlata, Newacheck, & Nessim, 1993):

> A family move disrupts the routines, relationships, and attachments that define the child's world. Almost everything outside the family that is familiar is lost and changes. Even a short move, which may allow the parents to maintain their network of supports and relationships, may force the child to change schools and friends. Thus, the child has to develop new friendships and adjust to a new curriculum and new teachers. (p. 1334)

Moves become even more stressful when the family has limited or recently lost resources, such as may occur when a parent has lost a job or parents have divorced.

At the individual level, being mobile can have negative consequences on a child's individual academic achievement and progress. In aggregate terms, high student mobility generally has negative impacts on schools, districts, and social programs as well. Fitchen (1994) reported that school personnel complained that "children who move frequently and who enter any given school late in the year are unable to do well on standardized testing, which reflects badly on the school's performance rating" (p. 427). Scollay and Everson (1985) argued that it was questionable to measure school performance with composite student achievement test scores if there was a high student mobility rate. They suggested an alternative process whereby data could be disaggregated to reflect mobile and stable student groups.

One area in student mobility research that typically has been overlooked is that all students can be affected by a move. Field (1984) suggested that the children who are left behind might be more agitated than usual, for a longer period of time than those who haven't lost friends to a move. Hendrick (1984) explained,

> Sometimes teachers underestimate what it means to a child when a friend moves away ... But children often feel quite depleted and adrift when this occurs ... As in working through any kind of separation, the leaver's and the leftbehind's feelings of grief, apprehension, and sometimes anger need to be recognized and honored. (p. 224)

Although there is no empirical evidence to show that academic performance of the leftbehinds or indigenous students are affected by those leavers or new arrivals, the potential impact ought not to be ignored in future research.

There are several earlier studies showing either positive or no relationships between mobility and school performance, especially for those children from military families. Greene and Daughtry (1961) found that student mobility had favorable effects on academic achievement and school adjustment. Cramer and Dorsey (1970) examined 366 sixth graders who were children of enlisted Air Force personnel, and found that higher reading proficiency tended to be associated with higher mobility, but the results were not statistically significant. A more recent study

(Marchant & Medway, 1987) also suggested that academic performance of military children who moved from base to base was not affected negatively due to the similarities in curriculum for American schools on military bases.

Academic performance and school progress of mobile students is likely to be affected by the context of their destinations as well. When students move to a more highly educated community, they may experience temporary learning barriers, since the mobile students are functionally disadvantaged relative to their new classmates in terms of prior academic exposure and related school experience (Straits, 1987). But in the long run, several studies suggest that mobile students from educationally disadvantaged communities may be more likely to profit from exposure to richer socio-cultural environments and that their academic performance continues to improve with increased exposure to the new environment (Klineberg, 1935; Lee, 1951; Brawner, 1973).

By briefly reviewing the literature focusing on student mobility's impact on academic performance, some tentative conclusions may be drawn. First, a modest body of empirical study of student mobility has been under development for many years, but only recently has the phenomenon started to receive national attention. Second, student mobility now is observed not only in urban settings but also in rural areas. Third, student mobility generally has been observed to impede both learning and instruction, although there are a few studies, often in atypical contexts, indicating the reverse. Fourth, and finally, student mobility affects virtually all people involved in the process. At the individual level, movers themselves are affected the most, but so are parents, teachers, school personnel, and classmates at both the departing and receiving schools.

In aggregate, student mobility may be associated with adverse consequences for educational institutions, such as lowered school or district accountability ratings, but further empirical evidence still is needed to gauge the size or consistency of such effects. Many of the existing studies were based on cross-sectional data drawn from small geographic settings, such as two schools, one military base, and one school district. A more carefully designed, larger scale study on student mobility, preferably with a longitudinal component, is warranted to delineate stable and generalizable relationships between student mobility and achievement. Possible contextual influences on mobile students' school progress also needs to be considered, to address shortcomings of the past studies. In sum, this supplementary component of the Statewide Texas Educational Progress Study (STEPS) is the agency's current attempt to fill in some of the gaps in knowledge concerning student mobility, particularly as it exists in Texas public schools.

Statement of Research Questions

Reflecting both the literature review and the agency's research needs, this study was designed to answer the following broad research questions:

1. What are the general sociodemographic characteristics of mobile students? How similar to or different from stable students are mobile students?

2. What is the magnitude of student mobility? How many students in Texas public schools are moving, and from where to where? What time of the school year are they most likely to move?

3. Which students are most prone to move? That is, can student mobility be predicted given certain pieces of information?

4. Are the achievement test scores of mobile students significantly different from the test scores of stable students?

5. Is there any relationship between students' subsequent test performance and impact of personal mobility history, such as the number of moves, timing of moves, and the nature of moves?

6. Is there any difference between individual students' achievement test scores before and after moving?

7. Is the relationship between the achievement test scores of mobile and stable students affected by other variables, both at individual and contextual levels?

8. At the campus and district levels, how are aggregate mobility rates related to schoolwide and/or districtwide performance, such as school and district accountability ratings?

As a part of the ongoing analyses in STEPS, this study also follows students who were first graders in the 1991-92 school year through 1995-96, to examine how their mobility status over time may be related to their academic achievement longitudinally. Information about this cohort is one aspect of the Systemwide Elementary Reform project that supplements STEPS.

Definitions of Key Variables

Student demographic characteristics and program participation status are defined according to the Public Education Information Management System (PEIMS) Data Standards (TEA, 1994). Campus-level variables and definitions, as employed in this study, are listed in Appendix A of this report.

Student outcome variables of concern in this research are standardized test results from the Texas Assessment of Academic Skills (TAAS). To determine whether a student is making academic progress before and after moving, the Texas Learning Index (TLI) on the TAAS reading and mathematics tests is being used. The TLI allows for comparison both across years and across grades *within* a subject area (Texas Education Agency, 1995a). A TLI score of 70 corresponds to the minimum expectations/ passing level and remains constant across administrations.

Student mobility, the subject of this investigation, deserves special attention because it is relatively difficult to measure and calculate but it has elicited widespread concern in the wake of implementation of the statewide accountability system. Within the discipline of demography, the term mobility "usually refers to spatial, physical, or geographic movement whereas in sociology it usually refers to a change in status, e.g., of occupation. The two forms may be distinguished by calling them geographic mobility and social mobility, respectively" (Shryock, Siegel & Associates, 1976, p. 373). In this study, geographic mobility is the form under scrutiny; changes from school to school qualify as student mobility.

In measuring mobility or in defining who is a mover and who is not, the mobility or migration period (or time interval) also must be specified. Examples of time periods used in geographic mobility studies are five years for the U.S. census, one year for the geographical mobility of Americans in the Current Population Survey by the U.S. Bureau of the Census, or one school semester. In this study, two discrete mobility periods are examined: mobility within a single school year, counted once each 6 weeks; and mobility between school years, counted once each year.

Mobility Within the School Year

In the current Texas public education system, one school year typically is divided into six 6-week periods. If a student changes schools between any two periods, by definition that student has made one intercampus move. It is possible for one student to make multiple moves during one school year. However, under this scheme, the maximum possible number of moves that can be counted for any given student is five times during one school year—that is, once each between two adjacent 6-week periods from mid-August to mid-May. Every move can be counted as an *outmigration* with respect to the departing school, and an *inmigration* to the receiving school. For example, if John moves from Campus A to Campus B, he is an *inmigrant* to Campus B and an *outmigrant* from Campus A. Any student who starts attending a Texas public school (i.e., is initially located in PEIMS) after the first 6-week period, or withdraws from a Texas public school (can no longer be located in attendance in PEIMS) before the last 6-week period, also is identified as *inmigrant* or *outmigrant* to the particular school, respectively. These special cases are called *new entrants* or *withdrawals*, for the purposes of this report. In contrast, a stable student or non-mover is anyone who was enrolled in the same school for six consecutive 6-week periods within a school year. The sum total of all inmigrants and outmigrants for a school is referred to as the *total student turnover* for that school.

Once the total number of inmigrants, outmigrants, and turnover is obtained, an appropriate denominator is needed to compute mobility rates for each campus, district, and the state as a whole. Computation of rates for student groups, such as those determined by student

ethnicity, sex, and grade level, are also possible. Since in this case the mobility is based on a whole academic year consisting of six 6-week periods, cumulative enrollment is a logical choice as the denominator for the rates. Texas is probably unique among the 50 states in its capacity to collect cumulative enrollment data and employ them in analyses of this magnitude.

Methods and formulas currently used to compute student mobility, by school districts and other state agencies, vary widely across the nation. Ligon and Paredes (1992) surveyed 155 directors of research and evaluation and heads of state departments of education in all 50 states and some other jurisdictions. Ninety-three local school districts and state agencies responded with 62 formulas and definitions. Virtually all formulas and other studies did not decompose the mobility index into two distinct parts—that is, the percentage of students moving out, and the percentage of students moving in. Mobile students can have an impact on both departing and receiving schools but empirical evidence is needed to establish which rate has a more salient impact, if any, upon aggregate campus performance. Therefore, three interrelated measures of student mobility are considered in this study:

1. *Student Immigration Rate* = $\frac{\textit{Number of Move-ins}}{\textit{Cumulative Enrollment}}$

2. *Student Outmigration Rate* = $\frac{\textit{Number of Move-outs}}{\textit{Cumulative Enrollment}}$

3. *Student Turnover Rate* = $\frac{\textit{Turnover}}{\textit{Cumulative Enrollment}}$

Since *turnover* is by definition the sum of *total number of students who moved in* and *total number of students who moved out*, and these three formulas share a common denominator (cumulative enrollment), the *turnover rate* also is the sum of the *immigration rate* and the *outmigration rate*.

Within school year mobility is primarily used for cross-sectional analysis. This study also examines student mobility longitudinally. Therefore, students' mobility status across years also must be tracked.

Mobility Between School Years

Between-year mobility status is determined on the basis of a comparison between the school where each student was enrolled in the fall and where each one had been enrolled one year earlier. Stable students or non-movers are all students who were enrolled in the same school two consecutive years. Mobile students, or movers, are all students who were enrolled in a different school from one year to the next. Between-year movers also can be categorized by whether they moved within or between school districts, counties, educational service center regions, or were movers from outside the Texas public school system. Between-year mobility can be indexed by whether mobility is a result of normative or non-normative growth, too. For example, a move by a fifth grader from an elementary school last fall to a middle school this fall is considered a normative move, and would not be viewed the same way as between-year mobility reflective of, for example, a family's relocation due to a parent's job transfer. That is, moves "prescribed by the school system are normative" while moves "initiated by child and family factors are non-normative" (Mehana & Reynolds, 1995). In this study, our primary focus is on non-normative moves.

Data and Sources

Primary data for the current study are from the Texas Education Agency's PEIMS database and TAAS files. PEIMS is used to produce comprehensive and detailed information accurately reflecting public education activity in over 1,000 school districts and 6,000 campuses throughout Texas. Under the current *Texas Education Code*, each school district is required to "participate in the Public Education Information Management System (PEIMS)" through a uniform reporting system (TEC §42.006).

The TAAS tests, first administered in the fall of 1990, are criterion-referenced tests that measure student achievement in reading and mathematics at Grades 3 through 8 and 10, and writing at Grades 4, 8, and 10. Other TAAS tests include science and social studies at Grade 8 and end-of-course assessments in Biology I and Algebra I at Grades 8 through 12. In this study, only TAAS reading and mathematics will be used for the following reasons:

1. According to prior studies, reading and mathematics tests are among the two most powerful student achievement indicators, and certainly among the most common. Such test scores were used in most of the published student mobility studies located in the review of literature.

2. TAAS reading and mathematics tests at Grades 3 though 8 are administered in May, which falls into the last 6-week period of a typical school year. The primary purpose of this study is to assess the impact of student mobility on achievement. For the within school year mobility analysis, it is especially logical to use mobility events of the first five 6-week periods to predict student achievement in the sixth, or last 6-week period.

3. TLI scores from TAAS reading and mathematics tests, administered at Grades 3 through 8 and 10, can be used to measure student growth within the same subject area longitudinally.

This study also uses campus and district performance and profile information compiled in the Academic Excellence Indicator System (AEIS). The AEIS reports aggregated PEIMS and TAAS information, making it an ideal source for campus- or district-level data.

Methods and Procedures

This study relies upon a combination of longitudinal and cross-sectional statistical methods. Extensive descriptive statistical analyses were conducted to learn about both within-year and between-year mobility. In addition, multivariate analyses, including survival analysis and hierarchical linear modeling, were employed to enhance understanding of the relationships between mobility and achievement while incorporating and statistically controlling for other individual student sociodemographic factors and contextual factors. The following table displays the analytic techniques used to respond to the research questions.

Data Analysis Used to Respond to Research Questions

Research Questions	Types of Analysis
1. What are the general sociodemographic characteristics of mobile students? How do they compare with stable students?	Descriptive statistical analysis
2. What is the magnitude of student mobility? How many students are moving, and from where to where? What time of the school year are they most likely to move?	Descriptive statistical analysis
3. What kinds of students are most likely to move?	Survival analysis and logistic regression to estimate causal relationships with other variables
4. Are the achievement test scores of mobile students significantly different from the test scores of stable students?	T-test to ascertain statistical differences between groups
5. Is there any impact of personal mobility history, such as the number of moves, timing of moves, and the nature of moves, on students' subsequent test performance?	Tukey's honestly significant difference (HSD) comparison of means; multiple regression analysis
6. Is there any difference between students' achievement test scores before and after moving?	Paired-comparisons T-test
7. Is the mobility-achievement relationship at the individual level affected by possible contextual variables?	Hierarchical linear modeling
8. How do aggregate mobility rates affect schoolwide/districtwide performance, and ultimately the school/district accountability ratings?	Tukey's HSD comparison of means; correlations

Results

Characteristics of Mobile Students

Mobility Within the School Year. In the 1994-95 school year, there were 3.8 million students enrolled for at least some period during the year in a Texas public school. Table 1 shows that 16 percent of them moved at least once during the year. That is, about one out of six students changed his or her campus at least once during one school year (or nine months), or if extrapolated, about one out of five during a 12-month period. This extrapolation probably is a conservative estimation of total annual (12-month) mobility because of the tendency for families to move during summer months (J. Costello, personal communication, June 8, 1996). The U.S. Bureau of the Census (1995) reported one out of six American school-aged children changed his or her residence during a 12-month period between March 1993 and March 1994. If one assumes that each instance of student mobility coincides with an instance of residential mobility, then the overall student mobility rate in Texas is higher than the national rate (20% versus 16.7%, respectively). Table 1 also shows that mobility rates vary with ethnicity and gender. Male students evince higher mobility than female students and Whites demonstrate a lower overall mobility rate (14%) than either African Americans (20%) or Hispanics (18%).

Figure 1 depicts the distribution of stable and mobile students according to their ethnicity and gender. The figure makes it easy to see the relative underrepresentation of Whites, and relative overrepresentation of males, among all mobile students.

Table 2 and Figure 2 (on page 16) both show that mobility rates are relatively high for students in primary grades, including early education, prekindergarten, kindergarten, and first and second grades. The rates then level off from the third to the seventh grade, and start to rise again at the eighth grade. Among ninth grade students, nearly one out of four moved at least once during the year. This 23 percent rate is the highest among Grades 1 through 12. Although mobile students in Grades 7 through 12 include dropouts, they account for only a small percentage of the mobility.

As Table 3 on page 17 shows, 15 percent of economically disadvantaged students moved at least once during the school year, compared with only 9 percent of those who are not. Students participating in gifted and talented (G/T) programs appear to be a very stable population, in that only 4 percent of them moved, compared to 12 percent for the non-G/T students. In other words, 96 percent of the G/T students stayed on the same campus for the

Table 1.
Who Moved During the 1994-95 School Year in Texas?

Student Characteristics	Cumulative Enrollment	Mobility Status				Moved At Least Once During the School Year					
		Stable		Moved At Least Once		One Move		Two Moves		Three or More Moves	
		Number	%	Number	%	Number	%	Number	%	Number	%
Gender											
Male	1,988,213 (51%)	1,655,492	83	332,721	17	265,558	80	55,980	17	11,183	3
Female	1,873,106 (49%)	1,583,081	85	290,025	15	234,910	81	46,996	16	8,119	3
Ethnicity											
African American	554,248 (14%)	444,280	80	109,968	20	87,713	80	18,700	17	3,555	3
Hispanic	1,402,077 (36%)	1,150,198	82	251,879	18	198,687	79	44,969	18	8,223	3
White	1,806,176 (47%)	1,560,195	86	245,981	14	201,250	82	37,469	15	7,262	3
Other	98,818 (3%)	83,900	85	14,918	15	12,818	86	1,838	12	262	2
Total	3,861,319	3,238,573	84	622,746	16	500,468	80	102,976	17	19,302	3

Figure 1.
Distribution of Stable and Mobile Students in 1994-95 by Ethnicity and Gender

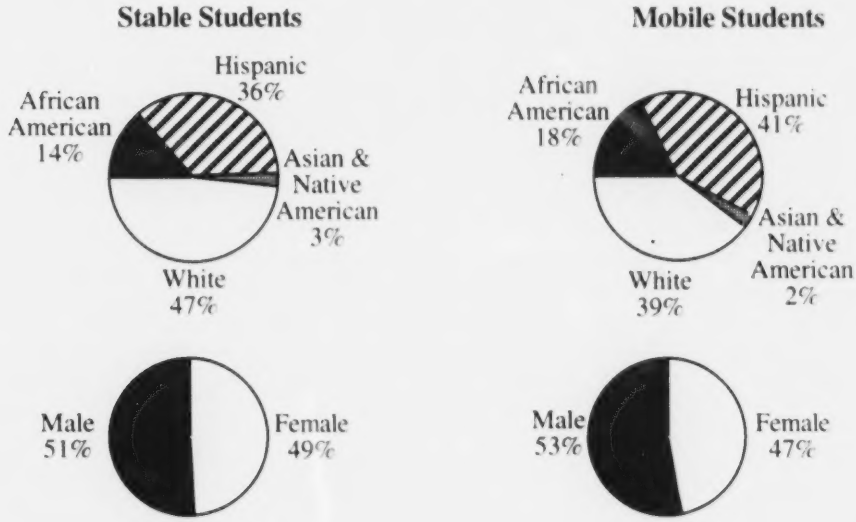


Table 2.
Texas Student Mobility by Grade Level in 1994-95

Grade Level	Cumulative Enrollment	Mobility Status				Moved At Least Once During the School Year					
		Stable		Moved At Least Once		One Move		Two Moves		Three or More Moves	
		Number	%	Number	%	Number	%	Number	%	Number	%
EE	17,555	10,284	59	7,271	41	6,444	89	753	10	74	1
PK	124,725	91,696	74	33,029	26	27,578	83	4,945	15	506	2
KG	287,852	237,607	83	50,245	17	40,718	81	8,201	16	1,326	3
1st	314,398	263,650	84	50,748	16	41,216	81	8,138	16	1,394	3
2nd	302,735	258,604	85	44,131	15	36,202	82	6,828	15	1,101	2
3rd	300,410	258,765	86	41,645	14	34,354	82	6,339	15	952	2
4th	301,982	262,308	87	39,674	13	32,757	83	5,962	15	955	2
5th	296,198	259,040	87	37,158	13	30,745	83	5,613	15	800	2
6th	298,610	260,481	87	38,129	13	31,049	81	6,065	16	1,015	3
7th	301,646	259,547	86	42,099	14	33,166	79	7,285	17	1,648	4
8th	295,000	250,701	85	44,299	15	33,648	76	8,639	20	2,012	5
9th	348,541	268,180	77	80,361	23	61,307	76	15,333	19	3,721	5
10th	259,251	211,380	82	47,871	18	38,125	80	8,083	17	1,663	3
11th	214,667	177,678	83	36,989	17	29,836	81	5,890	16	1,263	3
12th	197,749	168,652	85	29,097	15	23,323	80	4,902	17	872	3
Total	3,861,319	3,238,573	84	622,746	16	500,468	80	102,976	17	19,302	3

entire school year. Mobility rates also are slightly higher for students who are at risk of dropping out under state criteria (TEC §29.081), are receiving special education services, or are in career and technology education programs, relative to their counterparts who are known to not be receiving services. As expected, Table 3 shows students of unknown program participation status to have the highest percentages of mobile students (their unknown status likely is a reflection of their mobility, in that receiving districts and schools may not have had time to obtain records or complete assessments with parents to determine program participation, rather than the reverse).

Mobility Between School Years. The mobility status of the cohort of all first graders in the 1991-92 school year was checked annually through the 1995-96 school year. Sixty-eight percent of the students in that cohort moved at least once during the 4-year period (see Table 4 on page 18). Applying this statistic to the current cohort of first graders in 1995-96, the prediction is that two-thirds will move at least once before the school year of 1999-2000, when they are expected to enter the fifth grade. The rate likely will be even higher for African American students; three out of four is expected to move at least once before fifth grade.

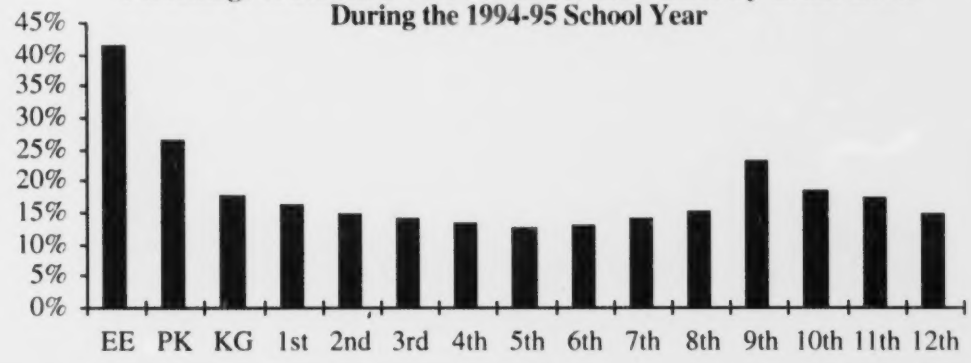
The 4-year campus mobility of first grade students includes normative moves, required due to the grade configuration of elementary schools in the districts. In 1994-95, of the 3,474 campuses with Grade 1, a total of 2,840 also included Grade 5. This means that only 18 percent of Grade 1 campuses would have required stable students to move to a different campus before Grade 6 due to campus grade configuration.

There is no obvious gender gap in terms of mobility rates between school years, as male and female students have the same percentage of students moving at least once. However, some groups of students tend to have slightly different mobility rates. For example, Table 5 on page 19 reveals that among students who attended prekindergarten, the percentage of those who moved at least once is three percent *lower* than it is for students who did not attend prekindergarten education. Most notably, the mobility rate for economically disadvantaged students is 6 percent higher than it is for those who are not.

Magnitude of Student Mobility

Mobility Within the School Year. As described in the previous section, one out of six students moved at least once during the 1994-95 school year. Of 622,746 mobile students, the majority (80%) moved only once and most of the remainder (17%) moved twice. However, even though the percentages are relatively low, quite a few students moved as many as four or five times during the school year. On average, each mobile student made 1.23 moves during the school year (622,746 mobile students made a total of 766,820 moves). Table 6 on Page 20 shows that of those 766,820 moves, 165,903 moves or 22 percent were identified as new entrants;

Figure 2.
Percentage of Students Who Moved At Least Once By Grade Level During the 1994-95 School Year



246,237 moves or 32 percent were withdrawals who could no longer be located in the PEIMS database; 150,015 moves or 20 percent were identified as intradistrict moves; and 204,665 moves or 27 percent were identified as interdistrict moves.

Distributions of the total number of moves by each mobility type (new entrant, withdrawal, interdistrict and intradistrict) and by student ethnicity are shown in Figure 3 on page 20. From the figure, it is easy to see that the distributions of new entrants and withdrawals are very similar, but there is a distinct contrast between intradistrict and interdistrict moves. One quarter of intradistrict moves are made by Whites, compared with 28 percent by African Americans and 45 percent by Hispanics, but nearly half (48%) of interdistrict campus moves are made

Table 3.
Student Characteristics and Special Program Services Received by Stable and Mobile Texas Students in 1994-95

Program	Cumulative Enrollment	Mobility Status				Moved At Least Once During the School Year					
		Stable		Moved At Least Once		One Move		Two Moves		Three or More Moves	
		Number	%	Number	%	Number	%	Number	%	Number	%
Economically Disadvantaged											
Yes	1,668,124	1,425,778	85	242,346	15	194,732	80	40,122	17	7,492	3
No	1,937,782	1,761,502	91	176,280	9	145,663	83	25,705	15	4,912	3
LEP											
Yes	445,992	391,110	88	54,882	12	46,139	84	7,693	14	1,050	2
No	3,089,393	2,736,114	89	353,279	11	285,874	81	56,389	16	11,016	3
At Risk											
Yes	1,507,677	1,317,548	87	190,129	13	155,420	82	29,273	15	5,436	3
No	2,098,229	1,869,732	89	228,497	11	184,975	81	36,554	16	6,968	3
Special Education											
Yes	400,145	344,009	86	56,136	14	44,621	79	9,473	17	2,042	4
No	3,205,761	2,843,271	89	362,490	11	295,774	82	56,354	16	10,362	3
Bilingual											
Yes	223,398	197,954	89	25,444	11	21,499	84	3,503	14	442	2
No	3,382,508	2,989,326	88	393,182	12	318,896	81	62,324	16	11,962	3
Chapter 1											
Yes	885,391	780,206	88	105,185	12	85,855	82	16,578	16	2,752	3
No	2,720,515	2,407,074	88	313,441	12	254,540	81	49,249	16	9,652	3
ESL											
Yes	165,764	143,006	86	22,758	14	19,200	84	3,147	14	411	2
No	3,440,142	3,044,274	88	395,868	12	321,195	81	62,680	16	11,993	3
Career and Technology Education											
Yes	567,610	494,203	87	73,407	13	60,540	82	10,819	15	2,048	3
No	3,038,296	2,693,077	89	345,219	11	279,855	81	55,008	16	10,356	3
Gifted/Talented											
Yes	274,503	264,401	96	10,102	4	9,010	89	987	10	105	1
No	3,331,403	2,922,879	88	408,524	12	331,385	81	64,840	16	12,299	3
Program Participation											
Unknown	255,413	51,293	20	204,120	80	160,073	78	37,149	18	6,898	3

by Whites, compared with only 15 percent by African Americans and 36 percent by Hispanics. When all school-to-school moves (both interdistrict and intradistrict moves) are distributed by ethnicity, it becomes clear that 72 percent of the intercampus moves made by Whites also are interdistrict moves. In contrast, however, the proportion of intercampus moves made by minority students are about equally distributed between intradistrict moves (51%) and interdistrict moves (49%).

Also shown in Table 6 on page 20, higher percentages of new entrants arrived at Texas public schools between the third and fourth 6-week periods (32%) than at other points during the school year. The table shows a fairly stable rate at which students withdrew from schools, or changed schools, over the course of the school year. Percentages of withdrawals ranged from 16 percent between the first and second 6-week periods, to 23 percent between the third and fourth 6-week periods. Percentages of both intradistrict and interdistrict moves are slightly higher between the third and fourth 6-week periods. This may reflect an effort by families to move at convenient points in the school year that coincided with breaks in the traditional school calendar.

What kinds of schools are attracting new entrants or losing students through withdrawal? Table 7 on page 21 summarizes campus information for 165,903 new entrants and 246,237 withdrawals. By comparing the distributions of all students, new entrants, and withdrawals across different campus characteristics, the following four observations can be made. First, 46 percent of all withdrawals were initiated from high schools and only 34 percent were initiated from elementary schools, which is disproportionate with total enrollment patterns at these levels. Second, 23 percent of all withdrawals were initiated from schools rated as either *low performing* or *pending/not rated* (which are mostly alternative instructional units) by the accountability system in 1994-95 (actually double the proportion of all students enrolled in these schools). Third, one-third of all new entrants went to campuses where at least 65 percent of the students were identified as being economically disadvantaged, and almost 60 percent enrolled at campuses where half or more of the students were ethnic minorities. Finally, although the alternative instructional campuses represent only a small number of students statewide, the new entrants to and withdrawals from the Texas public school system for those campuses alone account for 46 percent of the overall turnover rate (exclusive of students moving *within* the system). Alternative education campuses serve

Table 4.
4-Year Mobility and Demographics of the 1991-92 First Grade Cohort

Characteristics	Total Enrollment	Mobility Status				Moved At Least Once During the Four Years					
		Stable		Moved At Least Once		One Move		Two Moves		Three or More Moves	
		Number	%	Number	%	Number	%	Number	%	Number	%
Gender											
Male	151,249	47,794	32	103,455	68	56,227	54	31,008	30	16,220	16
Female	138,967	44,529	32	94,438	68	51,569	55	27,998	30	14,871	16
Ethnicity											
African American	41,292	10,884	26	30,408	74	14,644	48	9,481	31	6,283	21
Hispanic	102,624	36,069	35	66,555	65	34,653	52	20,762	31	11,140	17
White	140,378	43,142	31	97,236	69	55,994	58	27,910	29	13,332	14
Other	5,922	2,228	38	3,694	62	2,505	68	853	23	336	9
Total	290,216	92,323	32	197,893	68	107,796	54	59,006	30	31,091	16

high-risk student groups such as students with discipline problems, recovered dropouts, and pregnant and parenting students.

Both new entrants and withdrawals are "one way" flows. That is, the "sending" campus (or origin) is unknown for the new entrants, whereas the "receiving" campus (or destination) is unknown for the withdrawals. More information is available about those intercampus moves contained within the state, in that both the origins and destinations are known. Table 8 on page 22 is comprised of a series of mobility tables delineating characteristics of both campuses of departure (origins) and receiving campuses (destinations) for the 354,680 intercampus moves in 1994-95.

Panel A of Table 8 shows that intercampus mobility streams tend to flow (a) from the *Exemplary* schools to other *Exemplary*, *Recognized*, or *Acceptable* schools; (b) from the *Recognized* schools to other *Recognized* or *Acceptable* schools; (c) most often, from the *Acceptable* schools to other *Acceptable* schools; and (d) from the *Low-performing* schools to other *Low-performing* schools or to *Acceptable* schools.

Other single-factor mobility patterns are shown in Panels B, C and D. These are concerned with the percentages of students who are economically disadvantaged, or the percentages who are ethnic minorities, at both departing and receiving campuses. Generally speaking, students tend to

Table 5.
4-Year Mobility and Special Services Received by the First Grade Cohort of 1991-92

Program	Cumulative Enrollment	Mobility Status				Moved At Least Once During the Four Years					
		Stable		Moved At Least Once		One Move		Two Moves		Three or More Moves	
		Number	%	Number	%	Number	%	Number	%	Number	%
Attended Prekindergarten											
Yes	61,444	20,783	34	40,661	66	20,972	52	12,932	32	6,757	17
No	228,772	71,540	31	157,232	69	86,824	55	46,074	29	24,334	15
Economically Disadvantaged											
Yes	146,233	42,398	29	103,835	71	50,586	49	32,751	32	20,498	20
No	143,983	49,925	35	94,058	65	57,210	61	26,255	28	10,593	11
LEP											
Yes	48,093	17,501	36	30,592	64	17,035	56	9,232	30	4,325	14
No	242,123	74,822	31	167,301	69	90,761	54	49,774	30	26,766	16
At Risk											
Yes	69,475	21,819	31	47,656	69	25,058	53	14,819	31	7,779	16
No	220,741	70,504	32	150,237	68	82,738	55	44,187	29	23,312	16
Special Education											
Yes	24,259	7,269	30	16,990	70	9,056	53	5,129	30	2,805	17
No	265,957	85,054	32	180,903	68	98,740	55	53,877	30	28,286	16
Bilingual											
Yes	34,058	12,468	37	21,590	63	11,689	54	6,802	32	3,099	14
No	256,158	79,855	31	176,303	69	96,107	55	52,204	30	27,992	16
Chapter 1											
Yes	79,434	24,389	31	55,045	69	27,482	50	17,552	32	10,011	18
No	210,782	67,934	32	142,848	68	80,314	56	41,454	29	21,080	15
ESL											
Yes	9,892	3,453	35	6,439	65	3,921	61	1,695	26	823	13
No	280,324	88,870	32	191,454	68	103,875	54	57,311	30	30,268	16
Gifted/Talented											
Yes	12,535	4,545	36	7,990	64	5,019	63	2,270	28	701	9
No	277,681	87,778	32	189,903	68	102,777	54	56,736	30	30,390	16
Total	290,216	92,323	32	197,893	68	107,796	54	59,006	30	31,091	16

move between campuses with similar socioeconomic and ethnic compositions.

The results consistently show that there is a non-random relationship between the kinds of campuses students leave and the kinds to which they move. More formally stated, the magnitude of intercampus student mobility streams is highly dependent upon campus accountability ratings, the percentage of economically disadvantaged students on campus, and the percentage of ethnic minority students enrolled at both the campuses of origin and of destination.

Mobility Between School Years. For the cohort of Texas public school first graders in 1991-92, a total

Figure 3.
Distribution of Campus Mobility by Mobility Type and Ethnicity in 1994-95

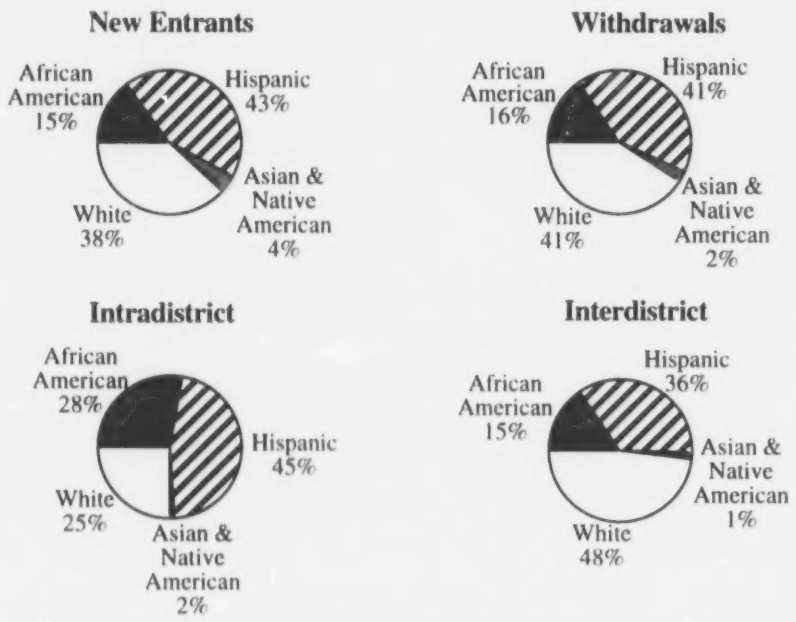


Table 6.
General Mobility: Timing and Type of Moves During the 1994-95 School Year in Texas Public Schools

Six-Week Period	Total Number of Moves		Type of Move During the School Year							
			New Entrant		Withdrawal		Intradistrict		Interdistrict	
Move Counted Between:	Number	%	Number	%	Number	%	Number	%	Number	%
1st & 2nd Periods	151,503	20	42,131	25	39,887	16	33,403	22	36,082	18
2nd & 3rd Periods	148,608	19	29,533	18	48,485	20	29,169	19	41,421	20
3rd & 4th Periods	186,042	24	53,329	32	55,629	23	31,505	21	45,579	22
4th & 5th Periods	148,398	19	27,555	17	51,218	21	30,309	20	39,316	19
5th & 6th Periods	132,269	17	13,355	8	51,018	21	25,629	17	42,267	21
Total	766,820	100	165,903	100	246,237	100	150,015	100	204,665	100

of 197,893 mobile students moved 326,067 times during the 4-year period from 1991-92 to 1995-96, averaging 1.65 moves per mobile student. Table 9 shows that of 326,067 moves, 256,972 of them (83,449 interdistrict moves plus 173,523 intradistrict moves) or 79 percent are contained within the Texas public school system. Consistent with the findings about within-year mobility just reported, the distributions of interdistrict campus moves and intradistrict campus moves are different. White students disproportionately moved between districts more often than their minority counterparts. Conversely, relative to Whites, ethnic minority students were more prone to move to different schools *within* the same districts.

By examining the last two columns in Table 9 on page 23, one can compute the percentage of students who withdrew from Texas public schools but re-entered them at some point during the 4-year period. Overall, about one-third of the withdrawals came back into the system during the 4-year period, but the pattern varies with ethnicity. It ranges from 20 percent for Asian Americans and Native Americans (together under "other"), to 26 percent for Whites, 37 percent for African Americans, and 39 percent for Hispanics.

From the previous section it was shown that 68 percent of 290,216 first graders in 1991-92 made at least one move during the next four school years. Table 10 on page 23 shows the annual mobility status over the 4-year period. The annual mobility rate increased over time, from 28 percent in the first year (1992-93) to 32 percent by the fourth year (1995-96). On the one hand, this increase is consistent with a general statewide trend within

Table 7.
1994-95 New Entrants and Withdrawals by Campus Characteristics

Campus Characteristic	Total Enrollment		New Entrants From Outside the System		Withdrawals to Outside the System	
	Number	%	Number	%	Number	%
Grade Grouping						
Elementary	2,167,767	51	87,336	53	84,017	34
Middle School	651,372	15	20,600	12	25,109	10
Junior High School	241,657	6	8,532	5	11,598	5
High School	1,057,234	25	40,832	25	112,028	45
Elementary/Secondary	108,546	3	8,321	5	13,257	5
Campus Type						
Alternative Instructional Unit	58,773	1	9,518	6	17,442	7
Instructional Campus	4,150,257	99	154,858	94	227,183	93
District Type						
Urban	1,479,830	35	64,402	39	96,816	39
Suburban	1,567,939	37	62,360	38	87,515	36
Nonmetropolitan	988,392	23	32,506	20	53,296	22
Rural	186,854	4	6,033	4	7,927	3
Campus Accountability Rating						
Exemplary	156,848	4	5,299	3	4,578	2
Recognized	589,633	14	20,942	13	22,831	9
Acceptable	3,058,329	72	112,658	68	162,322	66
Low-performing	308,927	7	11,727	7	30,828	13
Pending/Not Rated	113,740	3	15,277	9	25,678	10
Campus Average Student/Teacher Ratio						
Under 13 per Teacher	372,464	9	16,770	10	27,475	11
13 - <15 per Teacher	846,872	20	30,612	18	47,267	19
15 - <17 per Teacher	1,510,926	36	57,200	34	80,183	33
17 and Over per Teacher	1,485,815	35	59,192	36	87,993	36
Percentage of Economically Disadvantaged Students						
Under 20%	892,092	21	31,667	19	54,503	22
20% - <35%	739,091	17	24,096	15	47,567	19
35% - <50%	725,990	17	25,537	15	40,816	17
50% - <65%	613,343	15	24,032	14	33,911	14
65% - <80%	520,478	12	23,108	14	29,694	12
80% and Over	732,021	17	36,861	22	39,063	16
Percentage of Minority Students						
Under 20%	801,368	19	24,274	15	34,663	14
20% - <35%	676,973	16	21,922	13	35,724	15
35% - <50%	605,256	14	21,427	13	35,041	14
50% - <65%	502,485	12	18,938	11	30,029	12
65% - <80%	401,759	10	17,856	11	26,929	11
80% and Over	1,235,174	29	60,884	37	83,168	34

districts across grade levels. For these children, the intradistrict mobility rate was 13 percent in the first year, rising to 19 percent by the fourth year. The interdistrict mobility rate stayed relatively constant over time at about 7 to 8 percent.

Table 8.
Intercampus Mobility Streams By Campus Characteristics During the 1994-95 School Year

A. Campus Accountability Rating:

Origin	Destination: Pending		Exemplary		Recognized		Acceptable		Low-performing		Total	
	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%
Pending	3,625	21	144	1	1,116	7	9,865	58	2,151	13	16,901	100
Exemplary	206	3	658	10	1,746	27	3,636	57	126	2	6,372	100
Recognized	1,762	4	1,771	5	8,385	21	26,686	68	741	2	39,345	100
Acceptable	23,011	9	3,990	2	27,511	10	195,758	74	14,958	6	265,228	100
Low-Performing	6,501	24	111	0.4	795	3	14,159	53	5,268	20	26,834	100
Total	35,105	10	6,674	2	39,553	11	250,104	71	23,244	7	354,680	100

B. Campus Average Student/Teacher Ratio:

Origin	Destination: Under 13:1		13 – <15:1		15 – <17:1		17 and Over:1		Total	
	Number	%	Number	%	Number	%	Number	%	Number	%
Under 13:1	7,201	21	9,079	26	10,089	29	8,140	23	34,509	100
13 – <15:1	11,394	16	17,663	25	23,616	34	16,328	23	69,001	100
15 – <17:1	14,269	11	24,757	20	45,672	36	39,946	32	124,644	100
17 and Over:1	12,367	10	16,804	14	39,394	32	52,823	43	121,388	100
Total	45,575	13	68,499	19	119,173	34	117,516	33	349,542	100

C. Campus Percentage of Students Who Were Economically Disadvantaged:

Origin	Destination: Under 20%		20% – 35%		35% – 50%		50% – 65%		65% – 80%		80% & Over		Total	
	N	%	N	%	N	%	N	%	N	%	N	%	Number	%
Under 20%	20,226	40	12,319	24	8,119	16	4,817	10	2,626	5	2,046	4	50,153	100
20% – 35%	13,266	25	13,470	25	11,381	21	8,062	15	4,268	8	2,975	6	53,422	100
35% – 50%	9,067	15	11,459	19	14,310	24	12,212	20	7,820	13	5,697	9	60,565	100
50% – 65%	5,383	9	7,968	14	12,038	21	12,973	23	10,639	19	8,192	14	57,193	100
65% – 80%	3,300	6	4,632	9	7,647	14	10,608	20	12,063	23	14,485	27	52,735	100
80% & Over	2,205	3	3,310	4	6,016	8	8,537	11	14,840	19	43,892	56	78,800	100
Total	53,521	15	53,214	15	59,666	17	57,264	16	52,289	15	77,314	22	352,868	100

D. Campus Percentage of Students Who Were Ethnic Minorities:

Origin	Destination: Under 20%		20% – 35%		35% – 50%		50% – 65%		65% – 80%		80% & Over		Total	
	N	%	N	%	N	%	N	%	N	%	N	%	Number	%
Under 20%	19,461	73	11,198	42	7,057	27	4,040	15	2,095	8	2,191	8	46,042	100
20% – 35%	12,640	36	11,930	34	9,193	26	6,088	17	3,549	10	4,694	13	48,094	100
35% – 50%	7,762	19	9,060	23	10,245	26	8,445	21	5,247	13	6,943	17	47,702	100
50% – 65%	4,926	12	6,177	15	8,166	20	9,279	22	7,600	18	10,519	25	46,667	100
65% – 80%	2,729	7	3,914	10	5,022	13	6,792	18	7,933	21	14,679	38	41,069	100
80% & Over	2,782	2	5,045	4	6,921	6	9,908	8	14,477	12	84,161	70	123,294	100
Total	50,300	17	47,324	16	46,604	15	44,552	15	40,901	14	123,187	41	352,868	100

The Relationship between Student Mobility and Personal and Programmatic Factors

Mobility Within the School Year. Individual characteristics as well as participation in various educational programs were examined through multiple logistic regression (MLR) analysis as factors that could be related to student mobility. The following dichotomous (yes/no) independent variables were included: member of ethnic minority group, female, overage for grade level, identified as at risk, receiving Chapter 1 program services, economically disadvantaged, receiving gifted and talented program services, receiving special education services, and having limited English proficiency.

Three dependent variables, corresponding to the type of move, were included in the MLR: (1) whether students stayed on the same campus throughout the school year or withdrew out of the Texas public schools before the school year ended; (2) whether students stayed on the same campus during the entire school year or moved to another campus within the Texas public school system during the school year; and (3) whether the move crossed district lines or occurred within a district. Data for all children enrolled in Grades 1 through

Table 9.
Ethnicity and Type of Mobility for All Moves Made by the 1991-92 First Grade Cohort Over 4 Years

	Total Number of Moves		Type of Move During the Four Years							
			Interdistrict		Intradistrict		Withdrawals		Reentrants	
Ethnicity	Number	%	Number	%	Number	%	Number	%	Number	%
African American	53,948	17	12,244	15	31,320	18	7,561	14	2,823	17
Hispanic	112,270	34	27,008	32	64,425	37	14,990	29	5,847	35
White	154,573	47	43,062	52	75,328	43	28,606	54	7,577	46
Other	5,276	2	1,135	1	2,450	1	1,413	3	278	2
Total	326,067	100	83,449	100	173,523	100	52,570	100	16,525	100

Table 10.
Annual Mobility Status of the 1991-92 First Grade Cohort in Texas Public Schools

	Year 1 (1992-93)		Year 2 (1993-94)		Year 3 (1994-95)		Year 4 (1995-96)	
Mobility Status	Number	%	Number	%	Number	%	Number	%
Stable Students	**208,773**	**72**	**195,958**	**71**	**189,101**	**70**	**179,408**	**68**
Mobile Students:	**81,443**	**28**	**80,389**	**29**	**79,853**	**30**	**84,382**	**32**
Interdistrict Movers	24,061	8	21,115	8	19,630	7	18,643	7
Intradistrict Movers	38,587	13	41,136	15	43,460	16	50,340	19
Withdrawals	18,795	6	13,212	5	10,944	4	9,619	4
Reentrants	N/A	N/A	4,926	2	5,819	2	5,780	2
Total	**290,216**	**100**	**276,347**	**100**	**268,954**	**100**	**263,790**	**100**

12 in Texas public schools during the 1994-95 school year were included in this analysis.

Results from the overall model indicate that eight independent variables are statistically related to whether or not a student withdrew from the Texas public schools during the 1994-95 school year. In general, when other factors are statistically taken into account, students who are overage for their grade levels are over four times more likely to withdraw from Texas public schools before the school year ends than their non-overage counterparts. Students in gifted/talented programs, those receiving Chapter 1 services, and students receiving special education services are less likely than those not receiving these services to withdraw. The impacts of these four factors are reasonably consistent across grade levels. Students in Grades 10-12 identified as at risk of dropping out are more likely to withdraw than their non-at-risk counterparts, whereas students identified as at risk before Grade 10 actually are *less* likely to withdraw than their non-at-risk counterparts.

Six factors are consistently related to whether or not a student moved from one Texas public school to another during the 1994-95 school year. Other things being equal, minority students are 19 percent more likely to move than are Whites; students who are overage for their grade levels are 69 percent more likely to move than their classmates; students receiving Chapter 1 services are 10 percent *less* likely to move than those not receiving services; economically disadvantaged students are twice as likely to move than those without economic difficulties; students in gifted/talented programs are 65 percent *less* likely than their classmates to move; and students with limited English proficiency are 31 percent *less* likely to move than their native English-speaking peers. In sum, the statistical profile of a student who moved from school to school in Texas during the 1994-95 school year included these characteristics (in order of likelihood):

- economically disadvantaged;
- not receiving gifted and talented program services;
- overage for grade level;
- English proficient;
- an ethnic minority; and
- not receiving Chapter 1 services.

Interesting variations emerge when moves are grouped according to whether or not district boundaries were crossed in that process. Specifically, minority students are 59 percent *less* likely than Whites to move across districts, when other factors are statistically controlled. Another way of saying this is that minority students are 144 percent more likely than Whites to move from one school to another within a district. Across all grade levels, ethnicity has the strongest and the most consistent effect in distinguishing a single district intercampus mover from an interdistrict mover. Other consistent factors that are related to changing schools across districts, rather than moving within a given district, include (a) not being economically disadvantaged (but not for high school students); (b) not participating in gifted and talented programs; (c) not having limited English proficiency; and (d) not being at risk of dropping out (but not for students in Grades 1-3).

More detailed results for each of these three outcome variables are shown in Panels A, B, and C of Table B-1 in Appendix B. Each panel displays 12 grade-specific statistical models, in addition to the overall model in the column that includes students at all grade levels.

Mobility Between School Years. Survival analysis was used to examine between-year mobility for the cohort of all 1991-92 first graders. Survival analysis is a class of statistical methods designed for longitudinal data for studying the occurrence and timing of events. First, 1991-92 first graders who withdrew from the Texas public school system before 1995-96 were examined in relation to those students who did not move. Over time, students who attended prekindergarten were 37 percent *less* likely to withdraw from school before they reached Grade 5 than those without prekindergarten exposure, other things being equal. Also, the odds of withdrawing decrease with time: for each additional year that a student stays in a Texas public school, the odds of withdrawing from that school decrease by 53 percent, when other factors

are taken into account. Furthermore, the odds of withdrawing decrease with time at an increasing rate. Economically disadvantaged students are 39 percent more likely to withdraw from school than those who are not; students who are overage for grade are 15 percent more likely to withdraw than their non-overage counterparts; and students receiving Chapter 1 services are 10 percent *less* likely to withdraw than those who do not receive Chapter 1 services, when the other variables are statistically controlled. Consistent with the results from Grades 1-5 for the 1994-95 study of within year mobility at all grade levels, minority students of the 1991-92 cohort of first graders are 25 percent less likely to withdraw than Whites.

Intercampus moves also were compared to continuous enrollment at one school for four years. Results show that when other factors are held constant, economically disadvantaged students are 52 percent more likely to change schools than those not economically disadvantaged; students with limited English proficiency (LEP) are 24 percent *less* likely to change schools than non-LEP students; students in gifted and talented (G/T) programs are 13 percent *less* likely to change schools than those not in G/T programs; minority students are 12 percent *less* likely to change schools than the Whites (in contrast to the within-year findings reported earlier); students at risk of dropping out are 5 percent more likely to change schools; and students who attended prekindergarten are 7 percent *less* likely to change schools. There also is a strong effect associated with the number of years that a student is enrolled in the same school. For each additional year that a student stays in one school, the odds of his/her changing schools *decreases* by 26 percent.

For more detailed statistical results from the survival analysis of the 1991-92 first graders, readers are advised to refer to Table B-2 in Appendix B.

The Relationship between Student Mobility and Academic Performance

Mobility Within the School Year. Mobile students performed about 5-7 TLI points below their stable counterparts on both TAAS mathematics and reading tests than did stable students in all grade levels in the 1994-95 school year. As shown in Figure 4 on page 26, on average, stable students at Grades 3-8 and 10 achieved a TLI of at least 70 on the TAAS mathematics tests while their mobile counterparts achieved no more than 70. Although a TLI of 70 or above is required to meet minimum expectations for each grade, an *average* TLI does not indicate how many students in the group passed or failed the test. Figure 5 on page 26 clearly shows that the percentage of stable students meeting minimum expectations on the TAAS mathematics tests is much higher than that of mobile students. In fact, the majority of stable students at each grade level have met or passed the TAAS mathematics standards, while this is true for mobile students in Grades 3-5. For example, only 37 percent of Grade 8 mobile students passed the test, whereas 58 percent of their stable counterparts did. The gap between them is 21 percentage points, which is the largest gap among all grade levels in the figure. The smallest gap between stable and mobile students still is as much as 13 percent, occurring at third grade.

Results from the TAAS reading tests are not as dramatic as the mathematics tests. Figure 6 on page 27 shows both stable and mobile students at all grade levels have achieved an average TLI on the reading tests that is higher than 70, the value reflecting minimum expectations; Figure 7 on page 27 confirms that most of the students in each group passed the reading tests. However, wide absolute gaps still exist between stable and mobile students in terms of both average TLI scores and the percentage of students meeting minimum expectations. For example, the average third grade TLI reading score for stable students is 5 points higher than for mobile students, and the percent meeting minimum expectations for stable students is 11 percent higher than for mobile students. These gaps among the third graders are the smallest among students at each grade level studied. The largest gaps between stable and mobile students, in terms of both average TLI reading and percent passing, occur at higher grade levels, especially Grades 8 and 10. This result is mirrored in the mathematics test results presented in Figures 4 and

5. That is, despite the better overall performance on reading than mathematics, nearly constant gaps remain. First, stable students achieved 5-7 points higher than their mobile counterparts on average TLI mathematics and reading. Second, the percentage passing the mathematics or reading tests among stable students is between 11-21 points higher than the rate shown by mobile students. Third and perhaps most important, the gaps tend to increase with the students' grade level: the higher the grade level, the larger the gap.

When the percentages of mobile students meeting minimum expectations on TAAS mathematics and reading tests in Spring 1995 are compared with those of African American, Hispanic, and economically disadvantaged students reported on AEIS (Texas Education Agency, 1995b), the mobile student group has (a) a lower mathematics passing rate than either Hispanic or economically disadvantaged student groups but one that is slightly higher than African American students; and (b) a lower reading passing rate than the Hispanic.

Figure 4.
Mean Spring 1995 TLI Mathematics Scores for Stable and Mobile Students Not in Special Education

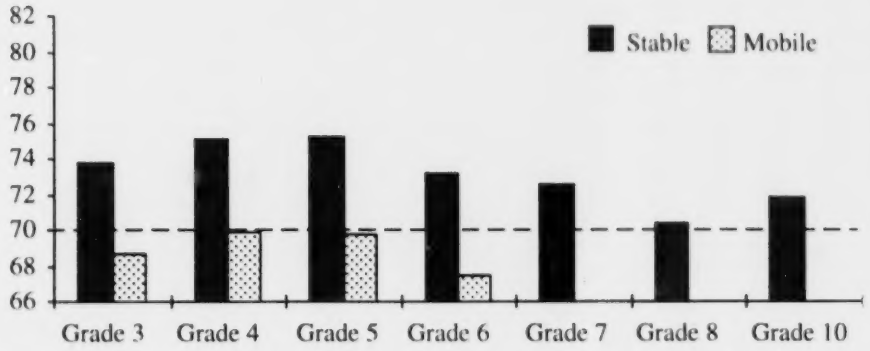
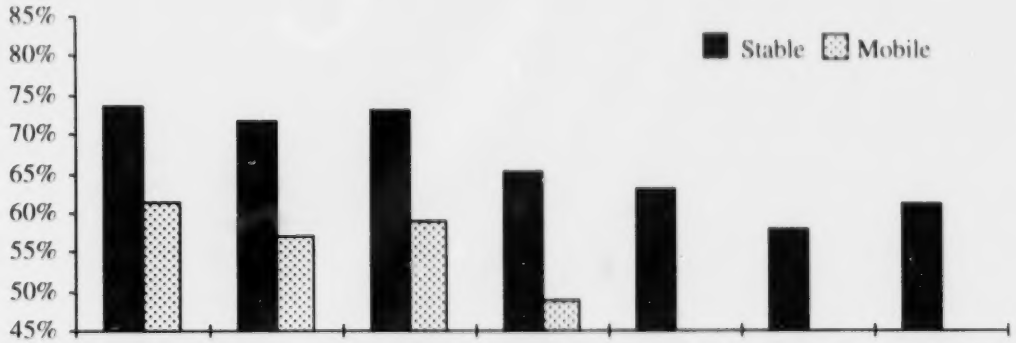


Figure 5.
Percentage of Students Not in Special Education Meeting Minimum Expectations on Spring 1995 TAAS Math Tests



student group, higher than the African American student group, and a rate similar to economically disadvantaged students.

Further analyses examined mobile students' test scores before and after moving, and compared average performance of mobile students over time with that of stable students. Figures 8 and 9 on page 28 are based on students who took TAAS mathematics and reading tests in two consecutive years (spring 1994 and spring 1995). Figure 8 shows that as a group, students in Grades 4-7 who did not move from school to school during the 1994-95 school year gained about 1.2 to 4.1 more TLI points on the 1995 test than they did on the 1994 test when they were in Grades 3-6. Conversely, as a group, Grade 8 students who did not move lost about 1.3 points between 1994 and 1995 on their average TLI mathematics scores. Over the same period, mobile students have shown similar performance patterns but they gained slightly less and lost more than their stable counterparts.

Figure 6.
Mean Spring 1995 TLI Reading Scores for Stable and Mobile Students Not in Special Education

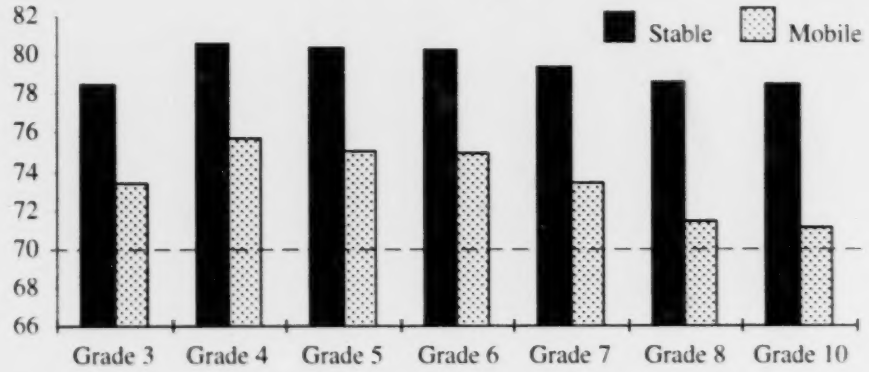
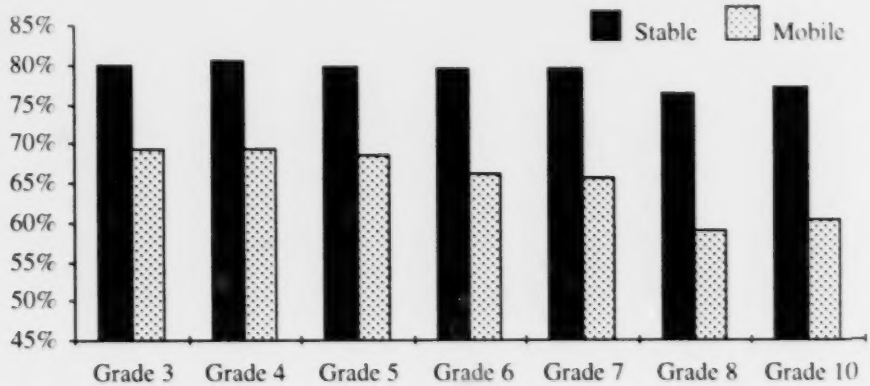


Figure 7.
Percentage of Students Not in Special Education Meeting Minimum Expectations on Spring 1995 TAAS Reading Tests



Average TLI gains/losses on the TAAS reading tests shown by stable students are relatively small, compared with performance on the TAAS mathematics tests. Figure 9 on Page 28 reveals that students in Grades 4-7 who did not move from one campus to another gained about 0.3 to 1.4 TLI points; similar students in Grade 8 lost about 0.6 of a point on their average TLI reading scores from 1994 to 1995. Among mobile students, again, their gains are even smaller and losses greater. Only mobile students in Grades 4-6 gained 0.6 to 1.1 points, while mobile students in Grades 7-8 lost from 0.3 to 1.8 points.

Further statistical tests revealed that the above TLI gain/loss differences between stable and mobile student groups at different grade levels are statistically significant in most cases. First, the average TLI scores for both TAAS mathematics and reading are significantly higher among stable student groups than among their mobile counterparts at Grades 3-8 and 10. Second, average TLI mathematics scores for students in Grades 4-7 (both stable and mobile) are significantly higher in 1995 than the scores they earned in the previous year when they were in Grades 3-6. Simultaneously, eighth grade students (both stable and mobile) performed significantly worse on the TAAS mathematics test than they had while in seventh grade. Third, average TLI reading scores earned by stable students in Grades 4-7 and mobile students in Grades 4-6 are significantly higher in

Figure 8.
Mean TLI Mathematics Gains Between 1994 and 1995 for Stable and Mobile Students Not in Special Education During the 1994-95 School Year Who Took TAAS Math Tests in Both Years

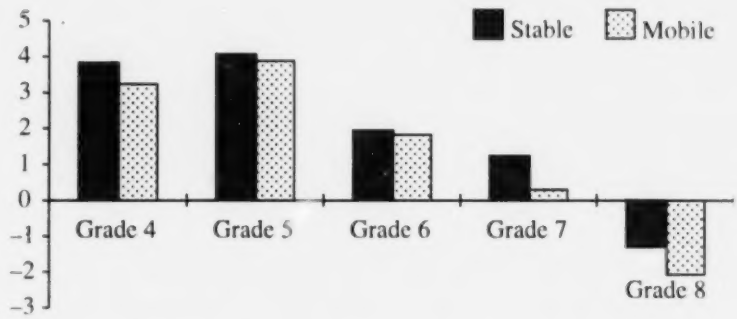
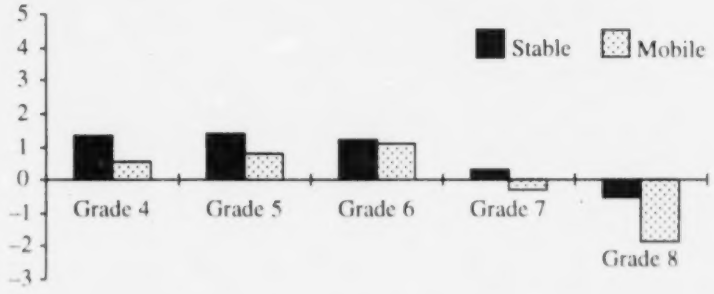


Figure 9.
Mean TLI Reading Gains Between 1994 and 1995 for Stable and Mobile Students Not in Special Education During the 1994-95 School Year Who Took TAAS Reading Tests in Both Years



1995 than in 1994. At the same time, seventh and eighth grade mobile students and eighth grade stable students performed significantly worse in 1995 on reading than they had in 1994. Fourth, and finally, the average TLI gains on TAAS mathematics tests for Grades 4, 7, and 8, and on TAAS reading tests for Grades 4, 5, 7, and 8, are significantly greater for stable students than for mobile students, whereas the losses are worse for the mobile students than for stable ones in those same grades.

Given the effects just described, one may wonder if there is any impact of personal mobility history within one school year, such as mobility frequency (number of moves), mobility period (timing of moves), or mobility type (nature of the moves) on students' subsequent test performance. Tables 11 and 12 (on page 30) show the average TLI scores on the TAAS mathematics and reading tests for students (those not in special education), by grade level and mobility characteristics.

Not surprisingly, stable student groups at all grade levels have the highest average TLI scores on both TAAS mathematics and reading tests. Intradistrict movers have the lowest average TLI scores on TAAS mathematics and reading tests. Among mobile students, these two tables show three findings of note. First, those students who moved just once have higher mean TLI scores than those who moved several times. Second, those students who moved between the third and fourth 6-week periods (generally about the time of winter breaks) have slightly higher mean TLI scores than those who moved during any other periods. Third and last, those who moved between the fifth and last 6-week periods (just before the spring TAAS mathematics and reading tests) performed the worst.

Based on Tables 11 and 12, statistical tests on mean TLI mathematics and reading scores for different groups of students were conducted. Following are some highlights from the Tukey's HSD tests.

Students who did not move achieved significantly higher mean TLI scores than any mobile student groups (interdistrict movers, intradistrict movers, or new entrants). There are significant differences in

Table 11.
Mean Spring 1995 TLI Mathematics Scores for Students Not in Special Education

Category	Mean TLI of Mathematics Tests*						
	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8	Grade 10
Mobility Type							
Interdistrict	69.4	70.6	70.7	68.5	66.6	64.3	67.0
Intradistrict	66.4	68.1	67.5	64.2	61.6	58.6	62.0
New Entrant	69.8	70.9	70.3	68.9	67.5	64.8	64.4
Stable	73.8	75.1	75.2	73.1	72.5	70.3	71.9
Mobility Frequency**							
Once	69.2	70.3	70.3	68.0	66.3	63.7	64.9
Twice	66.1	67.6	67.0	64.5	62.3	60.3	62.8
Three Times	64.0	65.4	64.9	62.6	59.3	58.5	59.1
Four Times	62.8	66.8	67.1	63.5	56.6	54.1	58.5
Mobility Period (6-weeks)							
Between 1st & 2nd	69.5	70.6	70.6	68.2	66.7	63.5	65.1
Between 2nd & 3rd	69.2	70.5	70.1	68.2	66.6	63.5	65.0
Between 3rd & 4th	70.0	70.9	70.8	68.6	66.8	64.2	65.1
Between 4th & 5th	67.4	69.0	68.6	66.5	64.9	62.7	64.5
Between 5th & 6th	66.9	68.2	68.5	65.5	62.9	60.7	62.7

* No data shown for Grade 9 because TAAS is not administered at ninth grade.
** Data not included for students who moved five times because of their low numbers.

TAAS test performances by interdistrict movers and intradistrict movers. Students who moved between districts scored significantly higher than did those who changed schools within their districts. The differences in means range from 3 to 6 for both tests, and presumably are associated with differences in other key characteristics (see, for example, Figure 3 on page 20).

Students who moved around within a district (intradistrict movers) scored significantly lower (from 2 to 6 points), on average, than did students who were new arrivals in Texas public schools. Differences between interdistrict movers and new entrants are found only at Grades 7 and 10 for TAAS mathematics, but at Grades 3-8 and 10 for TAAS reading. Grade 10 interdistrict movers obtained significantly higher TLI scores—three points, on average for both TAAS mathematics and reading tests—than did new entrants at the same grade. On TAAS mathematics tests, seventh grade interdistrict movers scored, on average, one TLI point less than did new entrants at the same grade. On the reading tests, interdistrict movers in Grades 3-7 scored between 1-2 TLI points lower than did new entrants at the same grade levels.

On average, the less frequent the mobility, the better the student performance. Stable students performed better than those who moved once, who in turn performed better than those who moved twice, and so on. In general, students who moved before the start of the traditional calendar's spring semester performed significantly better than those who moved after that point in the school year, and those who moved during the typical winter break (between the 3rd and 4th 6-week periods) outperformed all other movers. Students who moved during the last 6-week period of the school year performed worse on TAAS than those who moved at any earlier point in the year.

A multiple regression analysis of TAAS performance for the fourth through eighth graders in 1994-95 who also took the tests in spring 1994, when they were in the third through seventh grade shows that as expected, student performance in spring 1995 is highly associated with previous

Table 12.
Mean Spring 1995 TLI Reading Scores for Students Not in Special Education

Category	Mean TLI of Reading Tests*						
	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8	Grade 10
Mobility Type							
Interdistrict	74.0	76.2	75.8	75.7	74.3	72.8	73.9
Intradistrict	70.7	73.4	72.1	71.8	69.4	67.1	68.8
New Entrant	75.7	77.6	76.7	77.2	75.5	73.3	70.9
Stable	78.5	80.6	80.3	80.2	79.4	78.6	78.4
Mobility Frequency**							
Once	74.0	76.1	75.7	75.6	74.0	72.0	71.5
Twice	70.4	73.3	71.9	72.0	70.3	69.2	69.5
Three Times	68.6	71.9	69.0	70.3	67.3	66.9	66.0
Four Times	66.8	69.6	74.3	72.4	66.1	62.5	57.7
Mobility Period (6-weeks)							
Between 1st & 2nd	74.0	76.4	75.6	75.6	73.7	72.0	71.7
Between 2nd & 3rd	74.1	76.2	75.3	75.6	74.4	72.2	71.8
Between 3rd & 4th	74.7	76.5	76.2	76.4	74.8	72.7	72.2
Between 4th & 5th	72.4	75.1	74.1	74.3	73.0	71.2	70.9
Between 5th & 6th	71.8	74.0	73.7	72.9	70.8	68.8	69.0

* No data shown for Grade 9 because TAAS is not administered at ninth grade.
** Data not included for students who moved five times because of their low numbers.

performance in 1994. However, mobility still is negatively associated with student performance after adjusting for the students' previous performance, their socioeconomic status, and whether or not they were overage for their assigned grade levels. For example, mobile students scored 1.65 TLI points lower in reading than did their stable counterparts, when other factors were held constant (see Table B-3 in Appendix B for more detailed results from the analysis).

The question of whether the relationship between TAAS test scores and student mobility status at the individual level is affected by contextual variables was partially addressed through the use of hierarchical linear modeling (HLM). HLM permits researchers to model student-level outcomes within schools and then to examine any between-school differences that arise (Bryk & Raudenbush, 1992). Eighth graders in 1994-95 with TLI scores on TAAS mathematics and reading represented the first level (student level) in the HLM analysis. Eighth graders were chosen because they had the highest observed mobility rate among the third through eighth graders (see Figure 2). The number of schools selected for the second level (or school level) of the analysis was determined by checking the number of test takers and the number of mobile students on campus. About 250 schools were selected using two criteria: (1) at least 20 eighth grade students on campus took TAAS mathematics and reading tests, and (2) at least 15 of the test takers were mobile students. The use of these two criteria is rather arbitrary; the goal here is to have a manageable subset for the HLM analysis. The HLM analysis in each model—one for TAAS reading and the other for TAAS mathematics TLI scores—therefore is restricted to two student-level variables: the outcome variable (TLI mathematics or TLI reading), and one predictor (student mobility status). Two school-level variables are included in the analysis: student turnover rate for the campus, and the percentage of students on campus who are economically disadvantaged.

Results from the model indicate that, *on average*, student mobility status is *negatively* related to mathematics achievement as measured by TLI. Furthermore, the relationship between mobility status and mathematics achievement within schools varies from school to school; in other words, the association between students' mobility status and mathematics achievement is stronger in some schools than in others. Results also indicate that both school-level student turnover rate and the percentage of economically disadvantaged students on a campus are *negatively* related to school mean mathematics achievement. About 72% of the variation in school mean mathematics achievement is explained by campus turnover rate and the percentage of economically disadvantaged students on campus. Results also indicate that the negative relationship between mobility and achievement strengthens as school turnover rates and/or the percentage of students on campus who are economically disadvantaged increase (see Table B-4 in Appendix B for detailed statistics).

In general, the results for reading achievement follow the pattern of those for mathematics achievement as measured by the TLI. The one difference is that for reading, the percentage of students on campus who are economically disadvantaged has only a marginal effect on the negative relationship between mobility and achievement (see Table B-5 in Appendix B for detailed statistics).

Between School Year Mobility. Table 13 on page 32 is based on the 1991-92 cohort of first graders who were followed through 1995-96 and who took the spring 1996 Grade 5 TAAS mathematics and reading tests. It shows that students who stayed at the same school during the entire 4-year period between 1992 and 1996 earned the highest TLI scores on both the TAAS mathematics and reading tests. Subsequent Tukey's HSD statistical tests also generated results consistent with those reported on within school year mobility. First, the less frequent the mobility, the better the student performance. Second, the earlier the move relative to the timing of test administration, the better the student performance.

The Relationship between Student Mobility Rates and Campus/District Performance

The reader will recall that there are three different campus mobility rates used in the current study: inmigration rate, outmigration rate, and turnover rate. The rates for the 1994-95 school year, along with data needed to generate these rates, are listed by county, district and campus under separate cover in a supplement to this report (TEA, 1997). As expected, these rates are highly interrelated. The correlation coefficients among 6,453 schools range from .80 between the inmigration and outmigration rates, to .94 between the campus turnover and outmigration rates, and on up to .96 between the turnover and inmigration rates. Thus, if there is going to be only one mobility rate to be used in the future, the turnover rate is preferred since it captures both move-ins and move-outs and it is highly correlated with both the inmigration rate and outmigration rate.

Table 14 displays mobility rates by a wide variety of campus characteristics (see Appendix A for campus category descriptions). The first observation to be made is that turnover rates vary with school level. Both elementary schools and high schools have *higher* turnover rates than do middle/junior high schools. This is consistent with the findings depicted in Figure 2 on page 16.

Table 13.
Mean Spring 1996 TLI Scores for the 1991-92 First Grade Cohort Taking 5th Grade TAAS Tests

	Mean TLI, Spring 1996	
Category	**Mathematics**	**Reading**
Mobility Type		
Interdistrict	76.1	80.1
Intradistrict	76.6	80.4
Reentrant	75.9	80.3
Stable	78.6	82.8
Mobility Frequency		
Once	77.5	81.5
Twice	75.9	79.7
Three Times	74.4	77.8
Four Times	72.5	75.9
Mobility Period of Last Move (School Year)		
During the First Year	77.7	81.9
During the Second Year	77.2	80.8
During the Third Year	76.5	80.3
During the Fourth Year	75.9	79.8

The table also shows that the lower the turnover rate, the higher the accountability rating tends to be. Campuses rated as *Exemplary* have the lowest average turnover rate (15%), compared with *Low-performing* campuses' average turnover rate of 30 percent (twice that of the *Exemplary* schools). In between, campuses rated as either *Recognized* or *Acceptable* have average turnover rates of 21 percent and 26 percent, respectively. The average turnover rate for all campuses is 26 percent. Analysis by using Tukey's HSD test shows that the difference in average turnover rates between schools in any pair of the four accountability rating categories is statistically significant. In addition to the rated campuses (those labeled *Exemplary*, *Recognized*, *Acceptable*, or *Low-performing*), there are 581 campuses with their ratings either *Pending* or *Not-Rated*. The vast majority of these campuses are alternative instructional units. Therefore, their turnover rates are extremely high—on average, 65% for campuses *Not-Rated* and 106% for campuses with *Pending*. (Turnover rates can be higher than 100% in the case of campuses where total movement into and out of the school exceeded enrollment, i.e., in the case of alternative campuses where the *same* students may have entered and departed more than once during the year.)

As Table 14 shows, campus turnover rates also are associated with other campus performance indicators. First, the higher the campus turnover rate, the lower the percentage of students passing all TAAS tests taken. Second, the higher the turnover rate, the lower the percentage of graduates taking the Scholastic Aptitude Test (SAT) or the American College Testing Program's Enhanced ACT Assessment. Third, the higher the turnover

rate, the lower the percentage of students on campus meeting the SAT/ ACT criterion established in the accountability system. The relationship between campus turnover rate and aggregate TAAS performance can be quantified by computing the correlation coefficient between them. Based on this statistic, one can say that the relationship between campus turnover rates and the percentage of students on campus passing all TAAS tests taken is comparable to the relationship between the percentage of students on campus who are economically disadvantaged and the percentage of students passing all TAAS tests taken. From this, one can infer that campus turnover rate is just as important as the percentage of students on campus who are economically disadvantaged, when constructing comparable improvement comparison groups for the state's accountability system.

The turnover rate has a similar strong relationship to the district accreditation status. District turnover rates, which are based on campus numbers and aggregated upwards, range from 18 percent for the *Exemplary* districts to 26 percent for the *Accredited Warned* districts. Significant differences in turnover rates exist between the *Accredited Warned* and *Recognized* districts, between the *Accredited* and *Exemplary* districts, and between the *Accredited* and *Recognized* districts.

Conclusions and Recommendations

The purposes of this study were to examine the magnitude of student mobility in Texas public schools by reporting how many students are moving, when and where they are moving, and who is moving; and to clarify the relationships between

Table 14 continues on Page 34

Table 14.
1994-95 Student Mobility Rates by Campus Characteristics

Number of Campuses	Category	Inmigration Rate	Outmigration Rate	Turnover Rate
	CAMPUS TYPE			
3,539	ELEMENTARY SCHOOLS	13%	13%	26%
1,223	MIDDLE & JR. HIGH SCHOOLS	11%	12%	23%
1,225	HIGH SCHOOLS	10%	17%	27%
466	K - 12 SCHOOLS	31%	27%	58%
	CAMPUS ACCOUNTABILITY RATING			
255	EXEMPLARY	8%	7%	15%
1,004	RECOGNIZED	10%	11%	21%
4,345	ACCEPTABLE	12%	14%	26%
268	LOW-PERFORMING	11%	19%	30%
250	PENDING	58%	48%	106%
331	NOT RATED	34%	31%	65%
	AVG. TEACHER EXPER (ST AVG=11.5 YRS)			
1,269	UNDER 9.3 YEARS	14%	14%	28%
1,269	9.3 TO UNDER 10.8 YEARS	12%	14%	26%
1,284	10.8 TO UNDER 12.1 YEARS	11%	13%	25%
1,258	12.1 TO UNDER 13.6 YEARS	11%	14%	25%
1,271	13.6 YEARS AND OVER	12%	16%	28%
	PCT TCHRS W/ADV DEG (ST AVG=27.9%)			
1,234	UNDER 15.1%	13%	13%	26%
1,246	15.1% TO UNDER 21.9%	12%	13%	25%
1,230	21.9% TO UNDER 28.9%	12%	14%	25%
1,235	28.9% TO UNDER 37.9%	11%	14%	26%
1,236	37.9% AND OVER	13%	16%	29%
	PCT MINORITY TCHRS (ST AVG=23.4%)			
1,166	NONE	14%	13%	27%
1,400	UNDER 5.7%	10%	12%	21%
1,295	5.7% TO UNDER 14.0%	11%	13%	24%
1,282	14.0% TO UNDER 41.2%	13%	16%	29%
1,310	41.2% AND OVER	14%	16%	30%
	PCT AFRICAN AM TCHRS (ST AVG=8.2%)			
3,148	NONE	12%	13%	25%
721	UNDER 3.2%	10%	13%	23%
1,293	3.2% TO UNDER 9.8%	12%	15%	26%
1,291	9.8% AND OVER	15%	17%	31%
	PCT HISPANIC TCHRS (ST AVG=14.6%)			
2,600	NONE	13%	13%	26%
1,269	UNDER 4.9%	10%	13%	24%
1,293	4.9% TO UNDER 20.3%	12%	15%	28%
1,291	20.3% AND OVER	14%	15%	29%
	AVERAGE TEACHER SALARY			
1,270	UNDER $26,468	13%	13%	26%
1,271	$26,468 TO UNDER $28,059	12%	13%	24%
1,272	$28,059 TO UNDER $29,430	12%	13%	25%
1,270	$29,430 TO UNDER $31,055	12%	14%	26%
1,268	$31,055 AND OVER	13%	16%	29%
	AVG. STU/TCHR RATIO (ST AVG=15.7)			
1,264	UNDER 12.8	18%	17%	35%
1,272	12.8 TO UNDER 14.8	12%	14%	25%
1,272	14.8 TO UNDER 16.1	12%	14%	26%
1,272	16.1 TO UNDER 17.4	12%	14%	25%
1,271	17.4 AND OVER	12%	14%	26%
	INSTRUCTIONAL COST/PUPIL			
1,265	UNDER $2,226	12%	13%	25%
1,268	$2,226 TO UNDER $2,460	12%	13%	25%
1,268	$2,460 TO UNDER $2,708	11%	14%	25%
1,268	$2,708 TO UNDER $3,125	12%	14%	27%
1,263	$3,125 AND OVER	17%	18%	35%

Table 14. *(continued)*
1994-95 Student Mobility Rates by Campus Characteristics

Number of Campuses	Category	Inmigration Rate	Outmigration Rate	Turnover Rate
	ENROLLMENT GROUPINGS			
1,320	800 AND OVER	11%	15%	25%
1,168	600 TO UNDER 800	12%	13%	25%
1,487	400 TO UNDER 600	13%	13%	26%
1,357	200 TO UNDER 400	13%	13%	26%
1,121	UNDER 200	30%	26%	55%
	PCT MINORITY PUPILS (ST AVG=52.9%)			
1,517	UNDER 20%	9%	10%	19%
1,071	20% TO UNDER 35%	10%	12%	23%
1,208	35% TO UNDER 55%	12%	14%	26%
1,287	55% TO UNDER 85%	14%	17%	31%
1,370	85% AND OVER	15%	17%	31%
	PCT AFRICAN AM PUPILS (ST AVG=14.3%)			
1,633	UNDER 1%	12%	13%	25%
1,132	1% TO UNDER 4%	10%	12%	22%
1,254	4% TO UNDER 10%	11%	13%	25%
1,011	10% TO UNDER 20%	13%	15%	28%
1,423	20% AND OVER	15%	17%	32%
	PCT HISPANIC PUPILS (ST AVG=36.1%)			
1,276	UNDER 6%	10%	11%	21%
1,293	6% TO UNDER 15%	11%	13%	24%
1,208	15% TO UNDER 30%	12%	15%	27%
1,234	30% TO UNDER 60%	14%	16%	29%
1,442	60% AND OVER	14%	16%	30%
	PCT INCREASE IN PUPILS (93/94-94/95)			
1,232	UNDER -4.4%	14%	15%	28%
1,280	-4.4% TO UNDER -0.4%	12%	14%	26%
1,219	-0.4% TO UNDER 2.8%	11%	14%	26%
1,261	2.8% TO UNDER 7.1%	11%	14%	25%
1,239	7.1% AND OVER	14%	15%	28%
222	NEW CAMPUSES	23%	19%	41%
	PCT ECON DISADV PUPILS (ST AVG=46.3%)			
1,287	UNDER 22.1%	10%	12%	21%
1,291	22.1% TO UNDER 38.9%	11%	14%	24%
1,293	38.9% TO UNDER 54.9%	12%	14%	27%
1,292	54.9% TO UNDER 75.9%	14%	15%	29%
1,290	75.9% AND OVER	15%	16%	31%
	TAAS: PCT PASSING ALL TESTS TAKEN			
1,214	UNDER 46.0%	16%	19%	34%
1,226	46.0% TO UNDER 58.1%	12%	15%	27%
1,225	58.1% TO UNDER 66.8%	11%	13%	25%
1,217	66.8% TO UNDER 76.1%	11%	12%	23%
1,217	76.1% AND OVER	9%	9%	19%
354	TAAS NOT ADMINISTERED	34%	31%	65%
	AVERAGE DROPOUT RATE (93-94)			
1,739	UNDER 1.0%	12%	13%	25%
601	1.0% TO UNDER 3.5%	10%	16%	26%
255	3.5% TO UNDER 6.0%	9%	17%	26%
223	6.0% AND OVER	17%	24%	41%
3,635	NOT APPLICABLE	13%	13%	26%
	SAT/ACT: PCT TAKING (93-94)			
265	UNDER 40.1%	22%	26%	49%
266	40.1% TO UNDER 57.1%	10%	18%	28%
269	57.1% TO UNDER 66.8%	9%	17%	26%
267	66.8% TO UNDER 78.1%	9%	16%	25%
268	78.1% AND OVER	7%	13%	20%
5,118	NO GRADUATES	13%	13%	26%
	SAT/ACT: PCT >= CRITERION (93-94)			
265	UNDER 1.3%	26%	27%	53%
274	1.3% TO UNDER 8.4%	11%	18%	29%
259	8.4% TO UNDER 13.0%	9%	16%	25%
272	13.0% TO UNDER 20.0%	8%	17%	25%
265	20.0% AND OVER	7%	14%	21%
5,118	NO GRADUATES	13%	13%	26%
6,453	ALL CAMPUSES	12%	14%	26%

mobility and academic performance at the individual student, campus and district levels. Specifically, answers were sought to the following research questions:

1. What are the general sociodemographic characteristics of mobile students? How similar to or different from stable students are mobile students?

2. What is the magnitude of student mobility? How many students in Texas public schools are moving, and from where to where? What time of the school year are they most likely to move?

3. Which students are most prone to move? That is, can student mobility be predicted given certain pieces of information?

4. Are the achievement test scores of mobile students significantly different from the test scores of stable students?

5. Is there any relationship between students' subsequent test performance and impact of personal mobility history, such as the number of moves, timing of moves, and the nature of moves?

6. Is there any difference between individual students' achievement test scores before and after moving?

7. Is the relationship between the achievement test scores of mobile and stable students affected by other variables, both at individual and contextual levels?

8. At the campus and district levels, how are aggregate mobility rates related to schoolwide and/or

districtwide performance, such as school and district accountability ratings?

While the study's primary focus was on within-year student mobility, the issues also were examined longitudinally by following the Grade 1 students of 1991-92 through the 1995-96 school year. Analyzing data from the Texas Education Agency's Public Education Information Management System (PEIMS) database and Texas Assessment of Academic Skills (TAAS) files led to the following major findings.

Characteristics of Mobile Students

1. Mobility rates are higher for economically disadvantaged students than students who are not economically disadvantaged. Almost 60 percent of students who moved during the 1994-95 school year were economically disadvantaged.

2. Mobility rates also are higher for students who are identified as being at risk of dropping out, who are receiving special education services, and who are receiving career and technology education, than their counterparts. These all are student groups that frequently demonstrate relatively lower performance on the TAAS, regardless of their mobility.

3. Students participating in gifted and talented (G/T) programs are more stable (less likely to move at all) than classmates who are not in these programs.

4. Ethnic minority students generally are more mobile than White students. However, when they do move, White students are more likely to move across district lines than to move from school to school within a given district.

5. Analyses revealed that the typical mover *within* a given school year is a student who is economically disadvantaged, not participating in gifted and talented programs, overage for grade level, English proficient, an ethnic minority, and not participating in Chapter 1.

6. Students enrolled in upper elementary grades are less likely to move than those enrolled in early primary grades (EE - 3) or secondary (9 - 12) grade levels.

7. Students who attended prekindergarten in the Texas public school system are 37 percent less likely to withdraw from school (i.e., can no longer be located in the PEIMS database) and 7 percent less likely to change schools in their first 5 years of public schooling than are those who do not have prekindergarten exposure, after controlling for other sociodemographic characteristics and participation in a variety of programs.

Magnitude and Timing of Student Mobility

8. One out of six students changed schools at least once during the 1994-95 school year in Texas public schools.

9. The overall student mobility rate in Texas, expressed as the number of mobile students out of all students enrolled (per PEIMS), is higher than the national level.

10. Over a 4-year period of time, two-thirds of the first graders in 1991-92 moved at least once. If current Grade 1 students follow the same trend, two out of three will be attending different schools by the time they are fifth graders in the 1999-2000 school year. It is estimated that less than 20 percent of first graders are required to move before Grade 6 due to the grade level configuration of elementary schools.

11. Student mobility occurs throughout the school year, but students and their families do seem to take advantage of the winter break to make their moves, especially those new entrants coming from outside the Texas public school system (students located in PEIMS for the first time).

12. Results from the longitudinal analysis of first graders show that for each additional year a student stays in a Texas public school, the odds of withdrawing from school (in terms of not being located in PEIMS) decrease by 53 percent, and the odds of moving to another Texas public school

decrease by 26 percent, when other factors are kept equal.

Relationships between Student Mobility, Campus Characteristics, Program Participation, and Academic Performance

13. Students tend to move between campuses with similar socioeconomic and ethnic compositions. Furthermore, a disproportionate number of outmigrants (students leaving particular schools in the system) and withdrawals from the Texas public school system (students who can no longer be located in PEIMS at any Texas public school) are leaving *Low-performing* schools; however, outmigrants from *Low-performing* schools often move to other *Low-performing* schools in the state. New entrants to Texas public schools are disproportionately enrolling in schools with high percentages of students who are ethnic minorities or are economically disadvantaged. Overall, the highest student turnover rates, expressed as the number of student move-ins and move-outs at a campus divided by the cumulative enrollment of that campus, typically are shown by alternative campuses—a finding to be expected given the nature and purpose of such schools—even though the actual numbers of students involved are relatively small.

14. In general, the academic performance of mobile students is worse than that of stable students:

- Mobile students obtained lower Texas Learning Index (TLI) scores on both Texas Assessment of Academic Skills (TAAS) mathematics and reading tests than did stable students in all grade levels tested. On average, mobile students lagged behind by about 5-7 TLI points.

- The percentage of mobile students meeting minimum expectations or passing the TAAS mathematics or reading tests is much lower than it is for their stable counterparts at all grade levels. The gaps between groups, in terms of the percentage passing the mathematics or reading tests, range from 11 to 21 points. The gaps tend to increase with the students' grade level: the higher the grade level, the larger the gap.

- In aggregate, over a one-year period, mobile students' reading and mathematics TLI scores show smaller gains or greater losses than the changes in performance shown by students who do not move.

15. Among students moving between districts (interdistrict), changing schools within a district (intradistrict), or newly entering the system, the intradistrict movers performed the worst. On average, interdistrict movers performed about 3 to 6 TLI points better, and new entrants performed about 2 to 6 TLI points better, than intradistrict movers. This finding is consistent with the profile of intercampus movers described earlier.

16. The less frequent the mobility, the better the academic performance. On average, students who did not move during the 1994-95 school year performed between 5-7 TLI points higher on both TAAS mathematics and reading tests than did those who moved once, who in turn scored higher than students who moved twice, and so on.

17. The earlier the move, the higher the achievement. Those who moved during the last two 6-week periods of the school year scored significantly lower on TAAS mathematics and reading tests than those who had moved earlier. Those who moved during the winter break performed slightly better than those who moved during the middle of the fall semester, although this pattern was statistically significant only for the Grade 7 TAAS reading test. Results from longitudinal analyses of the 1991-92 first graders' scores, by the time they were in the fifth grade in 1995-96, also confirmed that the less frequent the mobility and the earlier the move, the better a student's academic performance is expected to be.

18. As anticipated, out of the variables being studied, students' previous achievement has the strongest impact upon their current performance. However, even after statistically controlling for their previous test scores and their socioeconomic status, mobile students still performed 1 to 2 TLI points lower than stable students on TAAS mathematics and reading tests.

19. The performance gap between mobile and stable students, as measured by TLI scores on the TAAS, is greater on campuses with higher percentages of economically disadvantaged students or higher student turnover rates.

20. The student turnover rate at the campus level has strong negative relationships with other campus/district performance indicators, such as the percentage of students passing all TAAS tests taken, the percentage of graduates taking SAT/ ACT, and the percentage of students meeting or exceeding SAT/ACT criterion scores for the accountability system. The strong negative association between accountability ratings and student turnover rates at the campus level is best shown by examining the variability in student turnover rates among schools with different accountability ratings. In 1994-95, for example, average student turnover rates ranged from 15 percent among *Exemplary* schools to 30 percent among *Low-performing* schools. In other words, on average, student turnover rates among *Low-performing* schools were twice as high as those among *Exemplary* schools.

21. Test results for 121,268 student taking the 1995 TAAS were excluded from the results used for accountability purposes because the students were not enrolled in the district as of October 28, 1994. Based on findings presented here, it can be estimated that about 42 percent of those students moved into the district after the start of the spring semester and 19 percent of those students moved into the district after the beginning of the fifth 6-week period or later.

Recommendations

Based upon these findings, the following recommendations are offered.

- By limiting the frequency of moves, and by timing moves to coincide with changes in the school year to the greatest extent possible, parents may be able to mitigate the negative relationship between changing schools and their child's academic performance. Cities in Texas might want to implement cooperative efforts among the schools, county governments and local apartment owners, similar to what was done in Rochester, New York (Kelley, 1996), to facilitate parents' efforts to keep their children in the same school throughout the school year. Simultaneously, districts should consider adopting policies similar to those in the Spring Branch (TX) Independent School District, that support keeping a student in the same school throughout the year (G. Ligon, personal communication, October 29, 1996).

- Schools and districts should examine the resources and programs available to help mobile students make a smooth transition into a new school. These students are disproportionately from groups that demonstrate lower performance on TAAS, relative to their peers. The additional drop in academic performance associated with mobility may have long-term implications for both individual student academic progress and overall campus and district performance.

- Findings from this study of student mobility support continuing to exclude performance of students who move into the district *late* in the school year from campus and district accountability ratings. The later in the school year students move, the less well they perform on TAAS and the less time

districts have to help them adjust to the disruption in their academic progress. Results from a separate analysis of three years of student attendance data from 1993-94 to 1995-96 in Texas public schools showed that student enrollment normally peaks in the first two 6-week periods. However, student enrollment between the first day of school and the end of the first 6-week period is known to fluctuate widely (Kelley, 1996). Therefore, using enrollment figures from the second 6-week period seems more adequate than those from the first 6-week period, in terms of inclusiveness of students in the accountability system and relative stability of the numbers at the district level. For most districts and schools on a traditional calendar, the October "as of" date used to determine the subset of students included in the accountability system falls in the second 6-week period.

- This study also supports the current policy of determining the subset of students to be included in the accountability system *at the district level*, rather than at the campus level. In the 1994-95 school year, the majority of all school districts (598 out of 1,045) experienced no intradistrict movement by students; most of these districts contained only one campus of each type (elementary, middle, high school). Therefore, the inclusion of intradistrict movers in the October subset was irrelevant to most school districts, but among the remainder for whom the difference potentially was salient, the policy encourages taking steps to address issues such as uniformity of curriculum and support for student transition to new schools. Additionally, determining exclusion of students from the accountability system at the district level frees districts to determine appropriate placement of students into alternative settings without excessively excluding children from the accountability system. An analysis of the intradistrict moves made by students in this study shows that only 13% of all 150,015 intradistrict moves likely were determined by educators, i.e., were associated with alternative campuses. Instead, the vast majority of intradistrict moves occurred from regular campuses to regular campuses and were presumed as such to reflect family movement decisions. Therefore, the data indicate that educators likely are exercising appropriate discretion in placing students into alternative settings.

- Continue to include a measure of mobility in the construction of campus comparison groups for the computation of comparable improvement in the accountability rating system for Texas public schools and school districts. Because it captures virtually all forms of movement, explore the use of the campus turnover rates in place of the current mobility measure, which is based upon the percentage of the school year that each student was enrolled.

- Future research needs to examine a host of issues and questions raised by this report.

    1) Address the possible differential relationships between normative versus non-normative moves and student achievement. Normative moves are those that result from regular student progress that all students are expected to make, for example, moving from a primary grade school to a middle school between the fifth and sixth grades. The timing of normative moves and short- and long-term relationships to student achievement also need to be examined.

2) Examine programs and practices in schools where mobile students are performing better than expected.

3) Examine the impact of a uniform curriculum in moderating the negative relationships between student mobility and individual-level and aggregate academic achievement. Evidence exists that curriculum varies both *within* and *between* districts. A recent audit report revealed that in one Texas school district, for example, "... Schools teach different material in the same grades, [so that] students who transfer within the district often find themselves far behind.... Middle schools and high schools struggle to align students who come to them from feeder schools with different curricula." (Greenberger, 1996, p. B1).

4) Analyze further the relationship between mobility and grade-level retention.

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Appendix A

Texas Education Agency's
1994-95 Campus Analyze Category Descriptions

Appendix A
Texas Education Agency's
1994-95 Campus Analyze Category Descriptions

CAMPUS TYPE
A four-category grouping based on the range of grades offered, as reported to the Texas Education Agency.

CAMPUS ACCOUNTABILITY RATING
This category refers to the campus rating based on the 1995 accountability system. A campus' rating is based on performance on the Texas Assessment of Academic Skills (TAAS) test, the dropout rate, and the attendance rate. The four levels of accountability ratings for campuses and the general conditions of each of the criteria are as shown:

Rating	TAAS Passing	Dropout Rate	Attendance Rate
Exemplary	>=90%	<1.0%	>=94%
Recognized	>=70%	<3.5%	>=94%
Acceptable	>=25%	<6.0%	N/A
Low-Performing	<25%	>=6.0%	N/A

Some campuses are shown as *Pending* or *Not Rated*. Campuses with a rating of *Pending* operated as alternative education programs and will be evaluated under an alternative education accountability system. *Not Rated* campuses include those that do not serve students within the 1st through 12th grade span, such as prekindergarten centers and early education through kindergarten schools, as well as schools that serve only students in special education.

DISTRICT ACCOUNTABILITY RATING
Criteria for evaluating districts are the same as for evaluating campus performance; however the labels assigned differ. In 1995 the four district ratings were *Exemplary*, *Recognized*, *Accredited* and *Accredited Warned*. For 1996, statute changed the *Accredited* label to *Academically Acceptable* and the *Accredited Warned* label to *Academically Unacceptable*.

AVERAGE TEACHER EXPERIENCE
A five-category grouping of average teacher experience years computed as total professional experience years for all campus teachers divided by total teacher full-time equivalent (FTE) count. The sixth category, "Not Applicable," pertains to campuses reporting enrollment but not teachers.

PERCENT OF TEACHERS WITH ADVANCED DEGREES
A five-category grouping by district percentage of teachers with advanced degrees computed as the FTE count of teachers with a master's or doctoral degree divided by the total teacher FTE count. The sixth category refers to campuses with unreported teacher FTEs or campuses with no teachers with advanced degrees.

PERCENT MINORITY, AFRICAN AMERICAN, AND HISPANIC TEACHERS

Two five-category and one four-category sets of groupings according to the ethnic composition of campus teacher populations, as reported on the Public Education Information Management System (PEIMS). Minority percent is calculated as the sum of all non-white populations expressed as a percentage of the total. Non-white populations include Native American or Alaskan Native; Asian or Pacific Islander; African American, not of Hispanic origin; and Hispanic.

AVERAGE TEACHER SALARY
A six-category grouping by average campus teacher salary computed as the total salary of teachers divided by the total teacher FTE count. Total salary amount does not include career ladder or any other supplement.

AVERAGE STUDENT/TEACHER RATIO
A five-category grouping by average student/teacher ratio computed as the total number of students at each campus divided by the total teacher FTE count at the campus. The sixth category, "Not Applicable" pertains to campuses reporting enrollment but no teachers.

INSTRUCTIONAL COST PER PUPIL
A five-category grouping of campuses based on the instructional cost per pupil. Instructional costs are the sum of expenditures budgeted for all activities dealing directly with the instruction of pupils, including instruction through the use of computers. The per pupil amounts are the current school year budgeted expenditures divided by the current number of students in membership. The source for budgeted expenditures is the fall PEIMS submission.

ENROLLMENT GROUPINGS
A five-category grouping based on the total number of students enrolled by campus as of the PEIMS fall collection date (late October of each year). Enrollment excludes students who are served but not enrolled by districts.

PERCENT MINORITY, AFRICAN AMERICAN, AND HISPANIC STUDENTS
Three five-category sets of groupings according to the ethnic composition of campus student populations, as reported on PEIMS. Minority percent is calculated as the sum of all non-white populations expressed as a percentage of the total. Non-white populations include Native American or Alaskan Native; Asian or Pacific Islander; African American, not of Hispanic origin; and Hispanic.

PERCENT INCREASE IN PUPILS (93/94-94/95)
A five-category grouping of campuses based on the growth or decline in student population over a one year period. The last category, "New Campuses," refers to campuses reporting students in the fall of 1994 for the first time.

PERCENT ECONOMICALLY DISADVANTAGED PUPILS
A five-category grouping according to the campus percentage of enrolled students classified as economically disadvantaged on PEIMS as follows:

a) Eligible for free or reduced-price meals under the National School Lunch and Child Nutrition Program;
b) From a family with annual income at/below the federal poverty line;
c) Eligible for AFDC or other public assistance;
d) Recipient of Pell Grant or comparable state need-based financial assistance program; or
e) Eligible for programs assisted under Title II of the Job Training Partnership Act.

TAAS: PERCENT PASSING ALL TESTS TAKEN

A five-category grouping of campuses based on the percent passing the Texas Assessment of Academic Skills (TAAS). For Grades 3-8 and 10, the total number of students passing all sections taken of the TAAS is expressed as a percentage of the total number of students taking one or more tests. This percentage excludes special education students and third graders taking the test in Spanish.

AVERAGE DROPOUT RATE (93-94)

A four-category grouping of campuses based on the total number of dropouts in Grade 7-12 expressed as a percentage of the total number of students in membership in Grades 7-12. A fifth category, "Not Applicable," refers to elementary grade level campuses.

SAT/ACT: PERCENT TAKING (93-94)

A five-category grouping based on the percent of graduates taking the 1993/94 Scholastic Aptitude Test (SAT) and/or American College Testing Program's ACT Assessment. A sixth category is reserved for campuses in which no SAT or ACT was administered.

SAT/ACT: PERCENT SCORING ABOVE CRITERION

A five-category grouping based on the percent of students who scored at or above the criterion (1000 on the SAT total, 24 on the ACT composite) for the 1993/94 SAT and/or ACT. A sixth category is reserved for campuses in which no SAT or ACT was administered.

Appendix B

Statistical Summary Tables

Table B-1.
Odds Ratios from Multiple Logistic Regression Analyses of Student Mobility in 1994-95

Panel A:

Variable	Dependent Variable: 1 = Move Out of the System; 0 = Stable												
	All Grades	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8	Grade 9	Grade 10	Grade 11	Grade 12
	Odds Ratio												
Intercept	0.03**	0.02**	0.02**	0.02**	0.02**	0.02**	0.02**	0.02**	0.02**	0.03**	0.03**	0.04**	0.04**
Minority	1.16**	0.80**	0.76**	0.78**	0.74**	0.72**	0.84**	1.02	1.13**	1.32**	1.01	0.87**	0.81**
Female	1.03**	1.05	0.98	1.05	0.98	0.95	0.95	1.02	0.93**	0.98	1.03	1.09**	1.23**
Over Age for Grade	4.24**	1.64**	1.53**	1.55**	1.55**	1.50**	2.08**	2.92**	3.38**	7.16**	7.53**	4.77**	2.94**
Identified At Risk	1.12**	0.83**	0.78**	0.74**	0.67**	0.69**	0.74**	0.89**	0.87**	0.97*	1.10**	1.28**	1.62**
Receiving Chapter 1 Services	0.62**	0.91**	0.93*	0.84**	0.85**	0.81**	0.91**	0.91**	0.92**	0.93**	0.97	0.87**	0.99
Economically Disadvantaged	0.95**	1.51**	1.56**	1.56**	1.57**	1.64**	1.38**	1.25**	1.22**	0.94**	0.99	0.97	0.99
Receiving Gifted/ Talented Services	0.38**	0.60**	0.48**	0.56**	0.50**	0.54**	0.48**	0.45**	0.36**	0.29**	0.31**	0.33**	0.31**
Receiving Special Education Services	0.71**	0.77**	0.89*	0.83**	0.92	0.91*	0.84**	0.85**	0.84**	0.78**	0.73**	0.76**	0.72**
Receiving LEP Services	0.98*	1.32**	1.28**	1.37**	1.53**	1.68**	1.51**	1.29**	1.33**	0.98	0.89**	0.92*	0.83**

Panel B:

Variable	Dependent Variable: 1 = Intercampus Move; 0 = Stable												
	All Grades	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8	Grade 9	Grade 10	Grade 11	Grade 12
	Odds Ratio												
Intercept	0.05**	0.07**	0.06**	0.06**	0.05**	0.06**	0.05**	0.05**	0.05**	0.06**	0.04**	0.04**	0.02**
Minority	1.19**	1.15**	1.20**	1.12**	1.15**	1.08**	1.18**	1.26**	1.31**	1.38**	1.28**	1.32**	1.29**
Female	0.97**	0.99	0.99	0.99	1.01	0.94**	0.93**	0.98	0.96**	0.96**	1.08**	1.07**	1.04
Over Age for Grade	1.69**	1.49**	1.49**	1.52**	1.53**	1.53**	1.78**	2.07**	2.28**	2.31**	2.33**	1.94**	1.68**
Identified At Risk	0.81**	0.85**	0.82**	0.76**	0.76**	0.78**	0.84**	0.88**	0.94**	0.89**	0.87**	1.09**	1.36**
Receiving Chapter 1 Services	0.90**	0.93**	0.90**	0.87**	0.81**	0.76**	0.68**	0.66**	0.70**	0.68**	0.69**	0.62**	0.72**
Economically Disadvantaged	2.02**	2.44**	2.51**	2.57**	2.57**	2.47**	2.07**	1.72**	1.49**	1.23**	1.15**	1.04	1.01
Receiving Gifted/ Talented Services	0.35**	0.38**	0.37**	0.39**	0.37**	0.36**	0.35**	0.42**	0.40**	0.39**	0.37**	0.37**	0.34**
Receiving Special Education Services	1.05**	0.81**	0.96	1.05*	1.06**	1.02	1.06**	1.10**	1.09**	1.11**	0.99	0.98	0.91*
Receiving LEP Services	0.69**	0.65**	0.64**	0.68**	0.70**	0.72**	0.69**	0.62**	0.63**	0.49**	0.49**	0.54**	0.55**

Panel C:

Variable	Dependent Variable: 1 = Interdistrict Move; 0 = Intradistrict Move												
	All Grades	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8	Grade 9	Grade 10	Grade 11	Grade 12
	Odds Ratio												
Intercept	3.45**	3.11**	3.55**	3.55**	3.50**	4.37**	4.86**	4.65**	4.79**	4.74**	3.92**	2.96**	1.55**
Minority	0.41**	0.46**	0.44**	0.42**	0.44**	0.40**	0.37**	0.34**	0.35**	0.39**	0.48**	0.58**	0.68**
Female	1.08**	1.06*	1.07*	1.05	1.07*	1.11**	1.11**	1.19**	1.10**	1.06	1.00	1.07	1.03
Over Age for Grade	0.93**	1.02	1.13**	0.99	1.10**	1.08*	0.94	0.99	0.77**	0.75**	0.62**	0.64**	1.10
Identified At Risk	0.63**	1.11**	1.06	0.97	0.64**	0.58**	0.54**	0.54**	0.49**	0.42**	0.43**	0.43**	0.38**
Receiving Chapter 1 Services	1.04**	0.76**	0.79**	0.77**	1.01	1.00	1.37**	1.61**	1.55**	1.81**	2.29**	2.20**	2.04**
Economically Disadvantaged	0.86**	0.80**	0.70**	0.78**	0.78**	0.74**	0.77**	0.84**	0.92*	0.97	1.07	1.05	1.02
Receiving Gifted/ Talented Services	0.64**	0.77*	0.78*	0.70**	0.53**	0.60**	0.54**	0.52**	0.58**	0.50**	0.69**	0.62**	0.64*
Receiving Special Education Services	0.84**	0.69**	0.73**	0.72**	0.73**	0.78**	0.74**	0.79**	0.85**	0.99	0.99	1.10	1.41**
Receiving LEP Services	0.85**	0.71**	0.71**	0.74**	0.74**	0.76**	0.78**	0.64**	0.57**	0.71**	0.82*	0.85	0.68

*p< 05 **p< 01

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Table B-2.
Estimates of Logit Model for Mobility of the 1991-92 First Grade Cohort

Panel A:

Independent Variable	D.V.: Withdrawal vs. Stable				
	Estimate	Std. Err.	Wald χ^2	Prob.>χ^2	Odds Ratio
Intercept	-1.008	0.029	1230.64	0.0001	0.37
Female	-0.014	0.011	1.62	0.2029	0.99
Minority	-0.288	0.014	406.70	0.0001	0.75
Limited English Proficiency (LEP)	-0.043	0.020	4.69	0.0304	0.96
Economically Disadvantaged	0.328	0.014	543.64	0.0001	1.39
Attended Prekindergarten	-0.457	0.017	723.13	0.0001	0.63
Over Age for Grade	0.136	0.015	83.04	0.0001	1.15
Receiving Special Education Services	-0.017	0.019	0.87	0.3497	0.98
Receiving Gifted/Talented Services	-0.047	0.022	4.34	0.0372	0.95
Receiving Chapter 1 Services	-0.110	0.014	59.55	0.0001	0.90
Identified At Risk	-0.029	0.016	3.16	0.0755	0.97
Year	-0.751	0.029	685.52	0.0001	0.47
Year ^{2}	0.060	0.006	98.26	0.0001	1.06

Panel B:

Independent Variable	D.V.: Intercampus Move vs. Stable				
	Estimate	Std. Err.	Wald χ^2	Prob.>χ^2	Odds Ratio
Intercept	-0.950	0.015	3838.98	0.0001	0.39
Female	-0.005	0.006	0.85	0.3558	0.99
Minority	-0.128	0.007	301.16	0.0001	0.88
Limited English Proficiency (LEP)	-0.279	0.010	788.40	0.0001	0.76
Economically Disadvantaged	0.421	0.007	3336.89	0.0001	1.52
Attended Prekindergarten	-0.072	0.008	87.94	0.0001	0.93
Over Age for Grade	0.070	0.008	79.76	0.0001	1.07
Receiving Special Education Services	-0.001	0.009	0.01	0.9199	1.00
Receiving Gifted/Talented Services	-0.138	0.012	130.09	0.0001	0.87
Receiving Chapter 1 Services	-0.009	0.007	1.62	0.2034	0.99
Identified At Risk	0.050	0.008	40.03	0.0001	1.05
Year	-0.306	0.015	444.96	0.0001	0.74
Year ^{2}	0.047	0.003	249.18	0.0001	1.05

Table B-3.
Summary of Multiple Regression Analyses of 4th Through 8th Grade Student Performance on TAAS Reading and Mathematics Tests in Spring 1994 and Spring 1995

	Dependent Variable: Spring 1995 TLI Mathematics Score			
Variable	Estimate	Standardized Estimate	T	Prob.>|T|
Intercept	24.3097		468.306	0.0001
TLI (Math), 1994	0.7068	0.7312	1063.954	0.0001
Economically Disadvantaged	–2.3477	–0.0833	–123.666	0.0001
Over Age for Grade	–2.4439	–0.0662	–99.995	0.0001
Mobile	–1.2039	–0.0198	–30.765	0.0001
$R^2 = 0.6108$				

	Dependent Variable: Spring 1995 TLI Reading Score			
Variable	Estimate	Standardized Estimate	T	Prob.>|T|
Intercept	39.3565		645.7860	0.0001
TLI (Reading), 1994	0.5429	0.6079	764.1900	0.0001
Economically Disadvantaged	–3.6035	–0.1265	–161.3470	0.0001
Over Age for Grade	–3.0517	–0.0820	–106.7940	0.0001
Mobile	–1.6505	–0.0270	–35.9800	0.0001
$R^2 = 0.4671$				

Table B-4.
Results from Hierarchical Linear Modeling Analysis of Grade 8 Students Taking the TAAS Mathematics Test in Spring 1995

Results from the Random-Coefficient Model:

Fixed Effect	Coefficient	Standard Error	T	Probability>|T|
Overall Mean Achievement	65.6407	0.438	149.859	0.000
Mean Mobility-Achievement Slope	–6.9573	0.302	–23.018	0.000
Random Effect	**Variance**	**df**	**χ^2**	**Probability>χ^2**
School Mean	48.0280	249	11096.183	0.000
Mobility-Achievement Slope	11.0816	249	455.213	0.000
Level 1 Effect	230.9493			

Results from Intercept- and Slopes-as-Outcomes Model:

Fixed Effect	Coefficient	Standard Error	T	Probability>|T|
Model for School Mean Achievement				
Intercept	79.2965	0.608	130.406	0.000
Turnover Rate	–0.1906	0.015	–13.113	0.000
% Economically Disadvantaged	–0.1560	0.011	–14.328	0.000
Model for Mobile-Achievement Slopes				
Intercept	–11.8397	0.928	–12.762	0.000
Turnover Rate	0.0944	0.037	2.553	0.011
% Economically Disadvantaged	0.0405	0.014	2.813	0.005
Random Effect	**Variance**	**df**	**χ^2**	**Probability>χ^2**
School Mean Achievement	13.3047	247	3805.229	0.000
Mobile Achievement Slope	7.4186	247	405.064	0.000
Level 1 Effect	230.9461			

Table B-5.
Results from Hierarchical Linear Modeling Analysis of Grade 8 Students Taking the TAAS Reading Test in Spring 1995

Results from the Random-Coefficient Model:

Fixed Effect	Coefficient	Standard Error	T	Probability>|T|
Overall Mean Achievement	74.1329	0.439	168.880	0.000
Mean Mobility-Achievement Slope	–7.1393	0.300	–23.728	0.000
Random Effect	**Variance**	**df**	**χ^2**	**Probability>χ^2**
School Mean	48.1229	249	8159.841	0.000
Mobility-Achievement Slope	9.5144	249	405.982	0.000
Level 1 Effect	256.8697			

Results from Intercept- and Slopes-as-Outcomes Model:

Fixed Effect	Coefficient	Standard Error	T	Probability>|T|
Model for School Mean Achievement				
Intercept	87.3988	0.589	148.329	0.000
Turnover Rate	–0.2335	0.014	–13.282	0.000
% Economically Disadvantaged	–0.1211	0.011	–11.500	0.000
Model for Mobile-Achievement Slopes				
Intercept	–11.1940	0.955	–11.718	0.000
Turnover Rate	0.0892	0.039	2.315	0.021
% Economically Disadvantaged	0.0268	0.015	1.823	0.068
Random Effect	**Variance**	**df**	**χ^2**	**Probability>χ^2**
School Mean	12.2258	247	2872.149	0.000
Mobile-Achievement Slope	6.6847	247	376.502	0.000
Level 1 Effect	256.8954			

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Reviews of local education agencies pertaining to compliance with Title VI Civil Rights Act of 1964 and with specific requirements of the Modified Court Order, Civil Action No. 5281, Federal District Court, Eastern District of Texas, Tyler Division are conducted periodically by staff representatives of the Texas Education Agency. These reviews cover at least the following policies and practices:

(1) acceptance policies on student transfers from other school districts;

(2) operation of school bus routes or runs on a nonsegregated basis;

(3) nondiscrimination in extracurricular activities and the use of school facilities;

(4) nondiscriminatory practices in the hiring, assigning, promoting, paying, demoting, reassigning, or dismissing of faculty and staff members who work with children;

(5) enrollment and assignment of students without discrimination on the basis of race, color, or national origin;

(6) nondiscriminatory practices relating to the use of a student's first language; and

(7) evidence of published procedures for hearing complaints and grievances.

In addition to conducting reviews, the Texas Education Agency staff representatives check complaints of discrimination made by a citizen or citizens residing in a school district where it is alleged discriminatory practices have occurred or are occurring.

Where a violation of Title VI of the Civil Rights Act is found, the findings are reported to the Office for Civil Rights, U.S. Department of Education.

If there is a direct violation of the Court Order in Civil Action No. 5281 that cannot be cleared through negotiation, the sanctions required by the Court Order are applied.

TITLE VII, CIVIL RIGHTS ACT OF 1964 AS AMENDED BY THE EQUAL EMPLOYMENT OPPORTUNITY ACT OF 1972; EXECUTIVE ORDERS 11246 AND 11375; EQUAL PAY ACT OF 1964; TITLE IX, EDUCATION AMENDMENTS; REHABILITATION ACT OF 1973 AS AMENDED; 1974 AMENDMENTS TO THE WAGE-HOUR LAW EXPANDING THE AGE DISCRIMINATION IN EMPLOYMENT ACT OF 1967; VIETNAM ERA VETERANS READJUSTMENT ASSISTANCE ACT OF 1972 AS AMENDED; IMMIGRATION REFORM AND CONTROL ACT OF 1986; AMERICANS WITH DISABILITIES ACT OF 1990; AND THE CIVIL RIGHTS ACT OF 1991.

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